

A review of the *Schinia tertia* (Grote) species complex (Lepidoptera: Noctuidae: Heliothinae)

MICHAEL G. POGUE¹ & CHARLES E. HARP²

¹ Systematic Entomology Laboratory, PSI, Agricultural Research Service, U. S. Department of Agriculture, c/o Smithsonian Institution, P.O. Box 37012, NMNH, MRC-168, Washington, DC 20013-7012, USA
mpogue@sel.barc.usda.gov

² 8834 West Quarto Ave., Littleton, CO, 80128, USA; cehmoth@aol.com

Abstract

Four closely related species of *Schinia* are diagnosed using characters of maculation, genitalia, larval host plants, and distribution. The **revised status** of both *Schinia albafascia* Smith and *Schinia brunnea* Barnes and McDunnough are based on differences in wing maculation and male and female genitalic structures. The **revised synonymy** of *Schinia megarena* Smith with *Schinia tertia* (Grote) is discussed. Male and female genitalia are described and illustrated for the first time for all species.

Key words: systematics, genitalia, morphology comparison, host plant, *Ericameria nauseosa* (Pallas ex Pursh) Nesom & Baird, *Ericameria paniculata* (A. Gray) H. M. Hall (Asteraceae), *Isocoma acradenia* var. *acradenia* (E. Greene) E. Greene (Asteraceae)

Introduction

This is the fifth in a series of recent papers resolving taxonomic problems in the North American species of the large heliothine genus *Schinia*. The first dealt with *S. unimacula* Smith and *S. obliqua* Smith (Pogue and Harp 2003a); the second with the *S. cupes* complex (Pogue and Harp 2003b); the third with the *S. regia* complex (Pogue and Harp 2003c); and the fourth described a new species, *S. varix* (Knudson, Bordelon, & Pogue) (Knudson, et al. 2003). The purpose of this paper is to review a small group of *Schinia* species related to *S. tertia*, hereafter referred to as the *tertia* complex.

Species of the *tertia* complex are variable in forewing maculation, with a reniform spot and a medial white band in the forewing. The medial band can be filled in with ground color as in most specimens of *S. brunnea* Barnes & McDunnough and *S. erosa*

Smith. Hardwick (1996) recognized the difficulties in distinguishing these taxa and recognized three species; *S. tertia*, *S. megarena* Smith, and *S. erosa*. He synonymized *S. albafascia* with *S. tertia* and synonymized *S. brunnea* with *S. erosa*. He noted the similarity of *S. megarena* with *S. tertia* and stated that the latter could be a pale population present in Utah. He gave no reason for synonymizing *S. albafascia* with *S. terita* or *S. brunnea* with *S. erosa*. He did not study the male or female genitalia.

By contrast we recognize five species in the *tertia* complex: *S. tertia*, *S. albafascia*, *S. erosa*, *S. brunnea*, and *S. ferrisi* **new species**. These conclusions are based on characters of the maculation and male and female genitalia.

Collections in the following public institutions were examined for material used in this study with acronyms in parentheses: Allyn Museum of Entomology, Sarasota, FL (AME); Amarillo College, Amarillo, TX (AC); American Museum of Natural History, New York, NY (AMNH); The Natural History Museum, London, U.K. (BMNH); University Museum, Brigham Young University, Provo, UT (BYU); Canadian National Collection, Ottawa, ON, Canada (CNC); Carnegie Museum, Pittsburgh, PA (CMP); Chicago Academy of Science, Chicago, IL (ChAS); Colorado State University, Ft. Collins, CO (CSU); Denver Museum of Nature and Science, Denver, CO (DMNS); Fort Hays State University, Ft. Hays, KS (FHSU); Illinois Natural History Survey, Champaign, IL (INHS); Iowa State University, Ames, IA (ISU); Kansas State University, Manhattan, KS (KSU); Natural History Museum of Los Angeles County, Los Angeles, CA (LACM); Michigan State University, East Lansing, MI (MSUE); Milwaukee Public Museum, Milwaukee, WI (MPM); Mississippi State University, Mississippi State, MS (MSU); Montana State University, Bozeman, MT (MSUB); Northern Arizona State University, Flagstaff, AZ (NAU); Nevada State Museum, Las Vegas, NV (NSM); Oregon Department of Agriculture, Salem, OR (ODA); Natural and Cultural History Museum, Oklahoma State University, Stillwater, OK (OKS); Oral Roberts University, Tulsa, OK (ORU); Snow Museum of Entomology, University of Kansas, Lawrence, KS (SMEK); Southern Nazarene University, Bethany, OK (SNU); Southwestern Oklahoma State University, Weatherford, OK (SWOSU); Texas Lepidoptera Atlas, data of E.C. Knudson and C.W. Bordelon, Houston, TX (TLA); University of Arkansas, Fayetteville, AR (UAF); University of Arizona, Tucson, AZ (UAT); University of Colorado Museum, Boulder, CO (UCM); University of Idaho, Moscow, ID (UIM); University of Minnesota, St. Paul, MN (UMSP); Stovall Museum of Science and History, University of Oklahoma, Norman, OK (UOKN); National Museum of Natural History, Smithsonian Institution, Washington, DC (USNM); Utah State University, Logan, UT (USU); University of Wisconsin, Madison, WI (UWM); University of Wyoming, Laramie, WY (UWL); and West Texas A & M University, Canyon, TX (WTAMU). Private collections examined include: Clifford D. Ferris, Laramie, WY (CDF); Charles E. Harp, Littleton, CO (CEH); C.W. Bordelon, Houston, TX (CWB); Donald J. Wright, Cincinnati, OH (DJW); Eric H. Metzler, Columbus, OH (EHM); James K. Adams, Calhoun, GA (JKA); Jeff Slotten, Gainesville, FL (JFS); Lars G. Crabo, Bellingham, WA (LGC);

Neil E. Dankert, Kearney, NE (NED); Ronald L. Huber, Bloomington, MN (RH); Richard Holland, Albuquerque, NM (RHA); Ronald H. Leuschner, Manhattan Beach, CA (RHL); Robert L. Langston, Kensington, CA (RLL); and Thomas E. Dimock, Ventura, CA (TED).

Key to species of the *Schinia tertia* complex

1. Forewing with broad white medial band (Figs. 1–11) 2
- 1'. Forewing with white medial band narrow (Figs. 12–16) or absent (Figs. 17–18) 5
2. Hindwing with large black discal spot; wide black marginal band (Figs. 7–16); uncus short (Figs. 27, 29, 31, 33); female papillae anales broadly triangulate with apex pointed to narrowly rounded (Figs. 36–37, 39–40, 41–44) 3
- 2'. Hindwing discal spot faint, pale gray, or absent; marginal band pale gray and narrow to absent (Figs. 1–6); uncus elongate (Fig. 25); female papillae anales elongate triangular, apex curved, pointed (Figs. 35, 38) *tertia*
3. Forewing ground color dark brown; white medial band narrow (Figs. 13–16); southern California *brunnea* (part)
- 3'. Forewing ground color brown; white medial band wide (Figs. 7–11); Colorado to California 4
4. Second sternite of male with large hair pencils (Fig. 21); Colorado to California *albafascia*
- 4'. Second sternite of male lacking hair pencils (Fig. 22); Arizona and southwestern New Mexico *ferrisi*
5. Forewing ground color cream to rufous (Figs. 17–18); second sternite in male with a vestigial hair pencil (Fig. 23) *erosa* (part)
- 5'. Forewing ground color reddish-brown to dark brown (Figs. 12–16); second sternite in male with a well developed hair pencil (Fig. 24) *brunnea* (part)

Schinia tertia (Grote)

(Figs. 1–6, 19–20, 25–26, 35, 38, 46)

Tamila tertia Grote, 1874:212.—Grote 1875:219.—Harvey 1875:10.

Schinia tertia: Smith 1883:231.—Smith 1891:54.—Smith 1893:279.—Dyar 1903:189.—Holland 1903:228.—Barnes and McDunnough 1917:39.—McDunnough 1938:105.—Franclemont and Todd 1983:159.—Poole 1989:897.—Poole and Gentili 1996:772.—Hardwick 1996:176.

Schinia megarena Smith, 1906:27.—Poole 1989:895 [synonym].—Poole and Gentili 1996:772 [synonym].—Hardwick 1996:177 [valid species]. **Revised synonymy.**

Schinia tertia megarena; Barnes and McDunnough 1917:39.—McDunnough 1938:105.—Franclemont and Todd 1983:159.

Diagnosis. Hardwick (1996) synonymized *S. albafascia* with *S. tertia*, but gave no reason

for this decision. *Schinia albafascia* is distinguished by the presence of a large, black quadrate discal spot in the hindwing, which is either absent or only faint and crescent-shaped in *tertia*. The marginal band in the hindwing of *albafascia* is wider and more darkly colored than that of *tertia*. The prominent white medial band in the forewing of *albafascia* is wider than in *tertia*. In *albafascia* this band is approximately 30% of the length of the forewing, measured along the posterior margin, whereas in *tertia* it is approximately 15%. The second sternite in the male abdomen of *albafascia* has a large hair pencil and scent pocket; in *tertia* the hair pencil is absent and the scent pocket is vestigial. In the male genitalia, the uncus is noticeably longer in *tertia* (Fig. 25) than in *albafascia* (Fig. 27), and the vesica has 2 1/2 coils (Fig. 26) compared to 3 in *albafascia* (Fig. 28). In the female genitalia, the papillae anales are sharply curved and have a pointed apex and in *tertia* (Fig. 38), and are less pointed and more broadly triangulate in *albafascia* (Fig. 39).

Description. *Abdomen* (Figs. 19–20): Second sternite with hair pencil absent and a scent pocket absent (Fig. 19) or vestigial (Fig. 20). *Male genitalia* (Figs. 25–26): Uncus elongate, length 0.95–1.10 mm (mean = 1.025 ± 0.045 ; n=12); valve elongate, length 2.50–2.90 mm (mean = 2.718 ± 0.118 ; n=11); length 9.24 ± 1.02 X width (n=11); saccus V-shaped. Vesica with 2 1/2 coils. *Female genitalia* (Figs. 35, 38): Papillae anales elongate triangular, apex curved, pointed eighth segment with minute scobinations; seventh segment with robust, elongate setae in several rows along distal margin, evenly distributed around segment, extending above distal margin of eighth segment.

Type material. Lectotype female, of *Tamila tertia* Grote, in BMNH, designated by Hardwick (1996). Type locality: Texas. Not examined. Lectotype male, of *Schinia megarena* Smith, in AMNH, designated by Todd (1982). Type locality: Utah [no specific locality]. Not examined.

Larval food plant. Unknown.

Biology. The life history of *tertia* is not known, but females have been observed in Kansas, Oklahoma, and eastern Colorado resting in a head down position on early blooms of *Liatris punctata* Hooker var. *nebraskana* Gaiser (CEH). The nominate variety of *L. punctata* overlaps much of this range, but extends into eastern Montana and North Dakota, but no *tertia* have been collected from this area. A third variety, *mexicana* Gaiser, may account for specimens from western Texas and southern New Mexico. In areas of overlap with *S. albafascia* in the Colorado foothills, *tertia* flies two to three weeks earlier and occurs in a different habitat.

Throughout much of its range, *S. tertia* can be the most common heliothine at lights. It regularly occurs with other species of *Schinia* including *S. grandimedia* Hardwick, *S. sexplagiata* Smith, *S. ciliata* Smith, *S. gaurae* (J. E. Smith), *S. coercita* (Grote), and *S. simplex* Smith in the western part of its range. In Kansas, Oklahoma, and central Texas *S. tertia* flies with *S. nundina* (Drury), *S. lynx* (Guenée), *S. nubila* (Strecker), *S. ultima* (Strecker), *S. saturata* (Grote), *S. mortua* (Grote), *S. chrysella* (Grote), *S. gaurae*, and *S. sordida* Smith.

Flight period. Collection records indicate perhaps 2 broods. There are 3 specimens in the USNM collection from Burnet Co., Texas, collected from 1–15 April and another specimen from Brazos Co., Texas, collected the end of May. There are a few specimens from July, but the principle brood begins flying in August with the majority from mid August to early September with a steady decrease into October (Fig. 45).

Distribution (Fig. 46). From Minnesota to Illinois, Iowa, eastern Missouri, Arkansas, Mississippi, Texas, west to Idaho, Utah, and south to southern California, Arizona, and New Mexico.

Material examined. All specimens are in the National Museum of Natural History, Washington, DC, unless otherwise noted. **ARIZONA:** APACHE CO., Baboquivari Mts., 11 Sep. 1924 (1♂), male genitalia slide USNM 46844, R.R. McElvare. COCONINO CO., Colorado River, Grand Canyon National Park, mi 74.4 R, old high water, 2 Sep. 2001 (2♀), J. Rundall (NAU); Colorado River, Grand Canyon National Park, mi 92.3 L, new high water (1♀), old high water (2♀), 3 Sep. 2001, J. Rundall (NAU); Colorado River, Grand Canyon National Park, mi 122.8 L, old high water, 4 Sep. 2001 (1♂), J. Rundall (NAU); Colorado River, Grand Canyon National Park, mi 166.5 L, shore, 1 Sep. 2003 (1♂), R.J. Delph (NAU). MOHAVE CO., Colorado River, Grand Canyon National Park, mi 180.8 R, shore (1♂, 3♀), old high water (1♂), new high water (1♀), 2 Sep. 2003, R.J. Delph (NAU). MARICOPA CO., Wickenburg, 2000', 25 Sep. 1980 (1♀), 12 Oct. 1980 (1♀), D. & V. Hardwick (CNC). YAVAPAI CO., Granite Dells, 4 mi N of Prescott, 28 Aug. 1970 (1♀), 2 Sep. 1970 (1♀), 6 Sep. 1970 (1♀), L. M. Martin (CNC); Prescott, 1–7 Sep. (1♀), Barnes Collection. **ARKANSAS:** HEMPSTEAD CO., Hope, 11 Aug. 1926 (1♂), 14 Aug. 1926 (1♀). SEBASTIAN CO., Camp Chaffee, 4 Sep. 1944, 6 Sep. 1944, L. Banks (ChAS). WASHINGTON CO., [no specific locality], 29 Aug. 1965 (1♂, 1♀), 6 Sep. 1966 (1♂, 1♀), R. L. Brown (UAF), 6 Sep. 1966 (1♂), R. L. Brown (EHM), 8 Sep. 1966 (1♂), R. L. Brown (UAF); Fayetteville, 10 Sep. 1967, J.R. Heitzman (RH), 22 Sep. 1956 (1♂), W. H. Whitcomb (UAF); nr. Fayetteville, 1 Sep. 1968, J.R. Heitzman (AMNH). **CALIFORNIA:** INYO CO., Death Valley National Monument, 45 mi NW Death Valley, 1700', 15 Oct. 1966 (3♂), D. F. Hardwick (CNC). SAN DIEGO CO., Campo, 23 Aug. 1931 (1♂, 1♀), E. R. Tinkham (CNC) (UMSP). VENTURA CO., Cuyama Valley, Apache Canyon 0.8 mi east of Hwy. 33, 5 Sep. 1997, T.E. Dimock (TED). **COLORADO:** No specific locality (1♂, 4♀), Barnes Coll. ADAMS CO., Bennett, Hwy #36 near Post Office, 5643 ft., 21 Aug. 1999 (1♀), 24 Aug. 1999 (2♀) C.E. Harp (CEH). ARAPAHOE CO., S of Manilla, gas station, Hwy. I-70 at Manilla Rd., 5663 ft., 4 Aug. 2000 (1♀), 15 Aug. 2000 (2♀), 19 Aug. 1998 (1♀), 21 Aug. 1999 (3♀), 24 Aug. 1999 (1m 1♀), C.E. Harp (CEH). BACA CO., Picture Canyon, Comanche National Grassland, SW of Campo, 25 Aug. 2002 (2♂, 4♀), M. G. Pogue & C. E. Harp; Picture Canyon, n. of Picnic Area, SW of Campo, 4282 ft., 26 Aug. 2002 (2♂, 4♀); Comanche National Grassland, SW of Campo, Picture Canyon parking area, 4255 ft., 29 Aug. 2002 (1m 7♀), C.E. Harp (CEH); Springfield, S end, Hwy #385/287, 4409 ft., 26 Aug. 2002 (2♂, 11♀), M. G. Pogue & C. E. Harp; Springfield, S end of town, along Hwy #385/287 at truckstop lights, 4409 ft., 28 Aug. 2002 (3♂,

9♀), 28 Aug. 2003 (6♂, 33♀), 30 Aug. 2002 (10♀), C.E. Harp (CEH). BENT CO., Las Animas, along Hwy. #50, downtown gas station, at lights 3 am, 3817 ft., 28 Aug. 2003 (1♂, 6♀), C. Harp (CEH). ELBERT CO., downtown Kiowa, along Hwy. #86 at Pawnee St., 6412 ft., 19 Aug. 2000 (2♀), C.E. Harp (CEH). FREMONT CO., Penrose gas station, 1 mi N of Hwy. #50 off Hwy. 115, 5293 ft., 7 Aug. 2001 (1♂, 3♀), 11 Aug. 2001 (1♂, 19♀), 17 Aug. 2001 (3♂, 9♀), 24 Aug. 2001, (1♀), C.E. Harp (CEH). LINCOLN CO., Limon gas station, S of Hwy I-70 @ exit #359, 5356 ft., 19 Aug. 1998 (2♂, 13♀), C.E. Harp (CEH). MORGAN CO., Fort Morgan, 4310 ft., 7 Aug. 1996 (1♀), D.J. Wright (DJW). OTERO CO., Vogel Canyon Picnic Area, 15 mi S of La Junta, 4340 ft., 18 Aug. 1997 (2♀), D.J. Wright (DJW); Hadley Rest Area, along Hwy. #50, ENE of La Junta, at lights 2 am, 4620 ft., 28 Aug. 2003 (1♂, 1♀), C. Harp (CEH); Rocky Ford, along Hwy #50, downtown gas station, at lights 2 am, 4161 ft., 28 Aug. 2003, C. Harp (CEH). PROWERS CO., Holly, downtown gas station along Hwy. #50, 3427 ft., 25 Aug. 2000 (1♂, 1♀), C.E. Harp (CEH). PUEBLO CO., Colorado City, off I-25 at mkr. #74, 5821 ft., 25 Aug. 2001 (3♀), C.E. Harp (CEH); 5 mi N. Pueblo, 5100 ft., 23 Aug. 1975 (1♀), Lafontaine & Bowen (CNC); Pueblo West, off Hwy. # 50 at McCullough Blvd., 4968 ft. 11 Aug. 2001 (3♂, 2♀), 12 Aug. 2001 (1♂, 4♀), 25 Aug. 2001 (8♀), C.E. Harp (CEH); Pueblo West, off Hwy. # 50 at Purcell Rd., 4968 ft., 25 Aug. 2001 (1♂), C.E. Harp (CEH); Pueblo N end, Hwy. I-25 @ mkr. 102, 4705 ft., 8 Aug. 1999 (1♀), 24 Aug. 2001 (1♂, 2♀), C.E. Harp (CEH); W of Pueblo, 26 Aug. 1958, M. May (AMNH); E of Pueblo, along Hwy #50, S of Pueblo Airport, at gas station lights, 4584 ft., 28 Aug. 2003 (3♀), C. Harp (CEH). WASHINGTON CO., Akron (CSU). WELD CO., Keenesburg, off Hwy. I-76, ext 39, 4955 ft., 16 Aug. 2000 (1♀), C.E. Harp (CEH); Nunn, 14 Aug. 1972 (UWL). **IDAHO:** MINIDOKA CO., Rupert, 10 Aug. 1957 (1♀) (CNC). **ILLINOIS:** ADAMS CO., 3 Sep. 1945, 5 Sep. 1947, Nielsen (INHS). KANE CO., [no specific locality], 26 Aug. 1940, L. Banks (ChAS). MARSHALL CO. Lacon, 23 Aug. 1938 (1♀), R.M. Barnes. PEORIA CO., [no specific locality], 22 Aug. 1938, 23 Aug. 1938, 3 Sep. 1941, 12 Sep. 1938, 18 Sep. 1938, F. Hasbrouck (FMNH, INHS); Main Street, 21 Aug. 1938, 23 Aug. 1938, F. Hasbrouck (INHS). PUTNAM CO. 17 Sep. 1935 (1♂), M.O. Glenn. **IOWA:** BOONE CO., Ledges State Park, 21 Aug. 1959, D. Brooks (WTAMU). JOHNSON CO., Iowa City, 18 Aug. 1898, J.B. Smith Collection (AMNH). MONONA CO., [no specific locality], 24 Aug. 1960 (ISU). STORY CO., Ames, Aug. 1910 (1♀). WOODBURY CO., [no specific locality], 11 Sep. 1920, C.N. Ainsley (UMSP). YUBA CO., [no specific locality], 24 Aug. 1898, 25 Aug. 1898, Wickham (ISU). **KANSAS:** BARBER CO., Medicine Lodge, N end of town along Hwy. #281, 1560 ft., 23 Aug. 2000 (CEH). BARTON CO., Great Bend, 15 Sep. 1988, M. Bland (FHSU); Hoisington, 30 Aug. 1994, G. Young (FHSU). BUTLER CO., rest stop 10 mi SW of El Dorado, Hwy. 35, 25 Aug. 1986, J. K. Adams (JFS). CHASE CO., 1 mi E and 1 mi N of Strong City, 1 Sep. 1990, M. Schwilling (FHSU). CLARK CO., 10 mi N of Ashland, just S of Bluff Creek, on *Liatris punctata*, 6 Sep. 1992, R. Huber & G. Salisbury (RH). COMMANCHE CO., Coldwater, 3 Sep. 1994, C.A. Ely (FHSU). COWLEY CO., [no specific locality], 28 Aug. 1989, G. Young (FHSU); Arkan-

sas City, 28 Aug. 1989, G. Young (FHSU). CRAWFORD CO., 4 mi E Pittsburgh, 1–15 Sep. 1972 (1♀), E.L. Todd. DOUGLAS CO., [no specific locality], Snow (SMEK); Lawrence, 3 Sep. 1987 (1♀), J.K. Adams (JFS). ELK CO., 2 mi N of Howard, Flint Hills (T29N R10E Sec 29, NE 1/4), 30 Aug. 1981 (1m 1♀), D.B. & V.N. Stallings (LGC). ELLIS CO., Hays, Fort Hays State University, 12 Aug. 1988, 21 Aug. 1989, 27 Aug. 1994, 29 Aug. 1994, 5 Sep. 1994, 6 Sep. 1992, 8 Sep. 1994, C.A. Ely, 23 Aug. 1994, 25 Aug. 1994, 28 Aug. 1994, 29 Aug. 1994, 18 Sep. 1994, P. Foster, 10–14 Sep. 1994, P. Foster & C.A. Ely, 5 Sep. 1992, G.M. Wilson (FHSU); 7.5 mi N and 1 mi E of Ellis, above East Spring Creek along 130th Ave., 7 Sep. 1994, P. Foster (FHSU). ELLSWORTH CO., 4 mi N and 5 mi W of Langley, S end of Kanopolis Lake, 2 Sep. 1984, F. Davis (FHSU). FINNEY CO., Garden City, 1 Sep. 1937 (1♂), Franklin (LACM). FORD CO., Ford County Lake, 20 Sep. 1982, C.C. Ely (FHSU). FRANKLIN CO., [no specific locality], 2 Aug. 1944, 7 Aug. 1947, 17 Aug. 1944, 30 Aug. 1946, W.H. Howe (CNC). GRAY CO. Montezuma, 3 Sep. 1989, C.J. Ochs (FHSU). HARVEY CO., Newton (AMNH). HASKELL CO. Sublette, 2 Sep. 1989, C.J. Ochs (FHSU). JOHNSON CO., Holliday, J.R. Heitzman (RH); Prairie Village, 31 Aug. 1979, J.R. Heitzman (RH). KINGMAN CO., Kingman WMA, G. Salisbury (FHSU). KIOWA CO., 10 mi S of Greensburg, 31 Aug. 1989, G. Salisbury (FHSU); 4 mi S of Greensburg, 28 Aug. 1991, G. Salisbury (FHSU); 4–5 mi S of Greensburg, 1991–1995, G. Salisbury (RH). LANE CO., [no specific locality], F.X. Williams (SMEK). LABETTE CO., Oswego, 27 Aug. 1964 (1♂), 30 Aug. 1960 (♀), female genitalia slide USNM 46832. LOGAN CO., 17 mi S of Monument, 15 Aug. 1975, Lafontaine & Bowen (CNC). MCPHERSON CO., 6 mi N of Canton, Maxwell Wildlife Refuge, 14 Aug. 1991, C.J. Ochs (FHSU); 7 mi S and 2 mi E of McPherson, 31 Aug. 1991, C.J. Ochs (FHSU). MITCHELL CO., 10 mi S and 1 mi W of Beloit, 25 Aug. 1990, P. Briney (FHSU). MORRIS CO., [no specific locality], 31 Aug. 1960, R. & K. Dreisbach (MSU). MORTON CO., 5 mi N and 2.5 mi W of Wilburton, Cimarron Recreation Area, 1 Sep. 1989, C.A. Ely (FHSU). RILEY CO., Manhattan, 30 Aug. 1937 (1♀), 1 Sep. 1937 (1♀), 4 Sep. 1937 (1♂, 1♀), 7 Sep. 1937 (1♂). RENO CO., 4.5 mi N of Plevna, 13 July 1991, D. Zongker (FHSU). RILEY CO., Manhattan, 30 Aug. – 21 Sep. (KSU); 6.5 mi S and 5 mi W of Manhattan, 3 Sep. 1994, P. Foster (FHSU). RUSSELL CO., 6 mi N and 3 mi E of Dorrance, vic. of Wilson Lake, 1 Sep. 1992, 18 Sep. 1993, P. Briney, 4 Sep. 1994, T. Beach (FHSU); 8 mi N and 8 mi E of Dorrance, vic. of Wilson Lake, 29 Sep. 1993, P. Briney (FHSU). SALINE CO., Salina, 1 Sep. 1988, C.A. Ely (FHSU). SCOTT CO., 12 mi N of Scott, Scott Wildlife Area, 26 Aug. 1994, C.A. Ely (FHSU). SEDGWICK CO., Wichita (2♂, 2♀), H.H. Walkden. SEWARD CO., 15 mi NE of Liberal, 26 Aug. 1975, Lafontaine & Bowen (CNC). SHAWNEE CO., [no specific locality], 2 Sep. 1901 (KSU). STAFFORD CO., St. John, restaurant lights, along Hwy. #281, 1893 ft., 23 Aug. 2000 (1♀), C.E. Harp (CEH). STANTON CO., 4 mi W of Johnson, at Bear Creek, 19 Aug. 1990, M. Schwilling (FHSU). SUMNER CO., [no specific locality], 31 Aug. 1942, Stallings (CMP). THOMAS CO., Colby, 17 Aug. 1990, E. Weiner (FHSU). TREGO CO., 1 mi S and 3 mi E of Wakeeney, 26 Aug. 1994, 14 Sep. 1994, C.A. Ely (FHSU). **MINNE-**

SOTA: POLK CO., Crookston, 2 Sep. 1937, D.G. Denning (UMSP). **RAMSEY CO.,** St. Paul, 1 Aug. 1937, A.A. Granovsky (UMSP). **MISSISSIPPI:** OKTIBBEHA CO., A & M College, 1 Sep. 1931 (1♂), R. E. Hutchins (MSU). **MISSOURI:** ATCHISON CO., Tarkio Prairie Nat. Area, loess prairie, 26 Aug. 1989, J.R. Heitzman (RH). **BOONE CO.,** Columbia, 8 Sep. 1989, H. Pavulaan (AMNH). **CLAY CO.,** Liberty (JKA); Birmingham, 29 Aug. 1968, J.R. Heitzman (RH); Kansas City, 24 Aug. 1894, F.J. Hall (AMNH). **GREENE CO.,** Willard, Sep. 1917 (1♀), A.E. Brower. **JACKSON CO.,** Independence, Adair Park, 19 Aug. 1965 (1♂), 29 Aug. 1965 (4♂, 3♀), J.R. Heitzman; Independence, 27 Aug. 1965 (1♀), 30 Aug. 1961 (2♂), J.R. Heitzman. **NEBRASKA:** BUFFALO CO., Kearney, T8N R15W Sec. 16, 16 Aug. 1998, N.E. Dankert (NED). **CASS CO.** Plattsmouth, 15 Sep. 1936, R.A. Leussler (AMNH). **DOUGLAS CO.,** [no specific locality], (CNC, INHS, UMSP). **LANCASTER CO.,** Lincoln, 29 Aug. 1937 (3♂), D.B. Whelan, 31 Aug. 1937 (2♂). **PLATTE CO.,** Columbus, 26 Aug. 1967, E.A. Froemel (RH). **SEWARD CO.,** 2 mi SE Seward, 18 Sep. 1972, Lafontaine & Lewis (CNC). **NEW MEXICO:** No specific locality (1♂), G. D. Hulst; **CHAVES CO.,** Roswell, Aug. 1922 (1♂), Cockerell. **COLFAX CO.,** 6 mi s of Maxwell, Hwy. I-25 @ mkr. #420, 6040 ft., 8 Aug. 2002 (27♀), 12 Aug. 2002 (3♂, 13♀), C.E. Harp (CEH). **DOÑA ANA CO.** Las Cruces (JKA). **EDDY CO.,** White City, 12 Sep. 1961 (1♂), M. & E. Roshore, A. Blanchard (AMNH); Carlsbad, 11 Sep. 1961 (1♂), M. & E. Roshore. **GRANT CO.,** Silver City, R. Leuschner (RHL). **GUADALUPE CO.,** Santa Rosa, 10 Sep. 1952, S.K. & A.H. Rindge (AMNH). **HIDALGO CO.,** Lordsburg, 22 Aug. 1960 (1♂), 23 Aug. 1960 (1♂), 27 Aug. 1960 (3♂), R.R. McElvare. **MCKINLEY CO.,** Ft. Wingate, 1–7 Aug. (1♀). **QUAY CO.,** Logan, along Hwy #54, downtown gas station lights, 3791 ft., 11 Sep. 2003 (3♀), C. Harp (CEH); San Jon, Hwy. #469 S of Hwy. I-I-40, at lights, 3989 ft., 12 Sep. 2003 (1♀), C. Harp (CEH). **SAN MIGUEL CO.,** Las Vegas, S.K. & A.H. Rindge (AMNH). **SANDOVAL CO.,** Jemez Springs, 16–23 Aug. (2♂, 3♀), male genitalia slide USNM 46831. **OKLAHOMA:** **BEAVER CO.** Lake Evans Chambers, 1 Sep. 1991, J.M. Nelson (ORU). **BLAINE CO.,** Roman Nose State Park (ORU). **CIMARRON CO.,** Black Mesa State Park, s end of Lake Carl Etling, 4296 ft., 29 Aug. 2002 (8♂, 24♀), C.E. Harp (CEH). **CLEVELAND CO.,** Norman, 2 Sep. 1950, 5 Sep. 1950, 7 Sep. 1950, Reinthal (UOKN). **COMANCHE CO.,** Ft. Sill, Lawton, CSU study site, West Range #W-3, blacklight trap, 17–18 Aug. 2003 (1♂), C. Harp & M. Garhart (CEH, CSU). **COTTON CO.,** 2 mi W of Walters, roadside along Hwy. #53, Arvest Bank lights, 1008 ft., 16 Aug. 2003, 19 Aug. 2003 (2♂, 5♀), C. Harp & M. Garhart (CEH); Temple, Hwy. #5, downtown carwash at lights, 1005 ft., 19 Aug. 2003 (5♀), C. Harp & M. Garhart (CEH). **GARFIELD CO.,** [no specific locality], 1960 (1♂, 2♀), J.F. Reinert; Garber, s end along Hwy. #74, 1198 ft., 25 Aug. 2000 (1♀), C.E. Harp (CEH). **GRANT CO.,** Medford, gas station, along Hwy. #11, 1067 ft., 23 Aug. 2000 (2♂, 3♀). **KIOWA CO.,** nr. Quartz Mtns. State Park, 2 Oct. 1971, R. Boelir (SWOSU). **LOVE CO.,** Marietta, 9 Oct. 1991, J.K. Adams (DMNS) (JFS). **OKLAHOMA CO.,** 3 mi sw Luther, Rustic Acres Rd. Nr. Hwy. I-44, 980 ft., 25 Aug. 1991 (1♀), 9 Sep. 1991 (9♀), 10 Sep. 1991 (2m 3♀), 11 Sep. 1991 (2♀), 20 Sep. 1991 (2♀), C.E. Harp (CEH); Luther, 9 Sep. 1991, C. Harp (RH) (JFS);

Bethany, 11 Sep. 1969, R. Medrud (SNU), 25 Aug. 1990, 28 Aug. 1990, 25 Sep. 1990, 25 Aug. 1991, 23 Sep. 1990 (JFS). PAYNE CO., Stillwater, 11 Sep. 1931, E. Hixon, 20 Aug. 1985, 28 Aug. 1985, 9 Sep. 1982, 15 Sep. 1982, 16 Sep. 1982, 21 Sep. 1984, 10 Oct. 1984, D.C. Arnold, Aug. 21-Oct. 4 (OKS). POTTAWATOMIE CO., 3.5 mi s McLoud, gas station, Hwy. I-40 at McLoud Rd., mkr. #176, 1104 ft., 24 Aug. 2000 (3♀), C.E. Harp (CEH). ROGER MILLS CO., Cheyenne, 7 June 1937, Standish & Kaiser (OKS). ROGERS CO., Claremore, 28 Aug. 1948, C. & P. Vaurie (AMNH). TULSA CO., Bixby, 30 Aug. 1984, 15 Sep. 1987, J.T. Criswell (OKS). WOODS CO., 14 mi N and 19 mi W of Alva, 6–15 Sep. 1976, J. Farley (NED). **SOUTH DAKOTA:** JACKSON CO., 19 mi E of Kadoka, Hwy. I-90 rest stop at mkr. #168, 20 July 2001, J.K. Adams (JKA). **TEXAS:** No specific locality (2♀), (1♂) B Neumoegen, (2m 7♀), Barnes Collection, (1♀) Dognin Collection, (1♂) E.L. Graef, (1♀) G.D. Hulst, (1♀) J. Jermy, (1♂, 1♀) J.R. Smith, (3♂, 1♀) O. Meske. BAYLOR CO., Seymour (AMNH). BEXAR CO., San Antonio, 28 Sep. 1948, K.C. Emerson (OKS). BLANCO CO., Sep. (1♀). BOSQUE CO., Clifton (1♂), C.V. Riley; Laguna Park, 24 Sep. 1970, A. Blanchard (AMNH). BRAZOS CO., College Station, 15–30 May (1♀), 17 Sep. 1957 (1♂), male genitalia slide USNM 46835. BREWSTER CO., Alpine, 1926 (1♂), 15–21 Apr. 1928 (1♂), 1–7 July 1926 (1♂, 1♀), 22–31 Aug. (1♀), 1–7 Sep. 1926 (3♂), 8–14 Sep. 1926 (1♂), O.C. Poling, 7–13 Sep. 1963, A. Blanchard (AMNH); Alpine, Davis Mtns., 1 Sep. 1960 (3m 2♀), 3 Sep. 1960 (1♀), 12 Sep. 1958 (4♂), male genitalia slide USNM 46833, R.R. McElvare; The Basin, Chisos Mtns., 15 Sep. 1958 (1♂), R.R. McElvare. BRISCOE CO., [no specific locality] (TLA). BROWN CO., [no specific locality] (TLA). BURNET CO., Shovel Mountain, (1♂, 4♀), 1 Apr. 1902 (1♀), 10 Apr. 1902 (1♀), 15 Apr. 1902 (1♀). CARSON CO., White Deer, 5 Sep. 1942 (2♂, 2♀), 6 Sep. 1942 (1♂), 7 Sep. 1942 (4♂, 2♀), male genitalia slide USNM 46836, 8 Sep. 1942 (2♂, 3♀), 9 Sep. 1942 (1♂, 1♀). CHAMBERS CO., Black Jack Springs (1♀). CHILDRESS CO., 10 mi N of Childress, 31 Aug. 1996 (1♀), C. Bordelon (CEH) (JFS). CORYELL CO., Camp Hood, 21 Sep. 1943, (FMNH). COTTLE CO., Wildlife Management Area (AMNH); 8 mi NW Paducah, 1800 ft., 23 Sep. 1968 (1♂, 1♀), D. F. Hardwick (MSU). CULBERSON CO., [no specific locality] (AMNH). DALLAS CO., [no specific locality] (AMNH). EL PASO CO., E. Montalla Hwy., 20–24 Sep. 1995 (1♀), E. C. Knudson (TLA); 10 mi E of El Paso, 9 Sep. 1991, E. Knudson (JFS). HARRIS CO., [no specific locality] (CMP). HEMPHILL CO., Gene Howe W.M.A., 27–28 Sep. 1987 (1♀), E. C. Knudson (TLA); 6 mi E Canadian, 30 Aug. 1975, Lafontaine & Bowen (CNC). JEFF DAVIS CO., Ft. Davis, 19 Aug. 1984 (1♀), E. C. Knudson (TLA). KERR CO., Kerrville (4♂, 5♀), Aug. 1908 (1♀), Sep. 1908 (1♂), male genitalia slide USNM 46840, 7 Sep. 1958 (3♂, 3♀), R.R. McElvare, 21 Sep. 1906 (1♂, 1♀), F.C. Pratt, Oct. 1905 (1♂), Oct. 1908 (1♂); Mountain Home, 22 Sep. 1906 (2♀). KIMBLE CO., [no specific locality] (TLA). LLANO CO., Buchanan Dam, 27 Sep. 1986, E. C. Knudson (TLA). MITCHELL CO., [no specific locality] (TLA). MONTAGUE CO., [no specific locality] 5 Aug. 1940 (3♂, 1♀), male genitalia slide USNM 46834, 29 Aug. 1940 (4♂, 6♀), 30 Aug. 1940 (1♂), 1 Sep. 1940 (1♂), 6 Sep. 1940 (1♂, 5♀), L.H. Birdwell; Forestburg (LACM) (AMNH); Nocona, 10 Sep. 1962 (1♂, 1♀),

19 Sep. 1962 (1♂), R.R. McElvare. NACOGDOCHES CO., [no specific locality] (TLA). PARKER CO., Weatherford (LACM). POTTER CO., Amarillo, 24 Aug.–10 Oct. 1977, R.E. Howard (BYU); Amarillo, campus of Amarillo College, 11 Sep. 1982, S.L. Jones (AC). PRESIDIO CO., Marfa, Davis Mtns., 11 Sep. 1960 (1♂, 1♀), R.R. McElvare. RANDALL CO., Canyon, 25 Aug. 1984, T. Gray, 30 Aug. 1984, G. Johnson (WTAMU). REEVES CO., Pecos, 16 Sep. 1952 (1♀), 22 Sep. 1952 (1♀), R. Leuschner. SHACKELFORD CO., [no specific locality] (TLA). SUTTON CO., [no specific locality] (TLA). TARRANT CO., Benbrook, 12 Sep. 1976 (1♀), E.C. Knudson. TAYLOR CO., Abilene (AMNH). TERRELL CO., 10 mi E Dryden, 28 Sep. 1980 (1♀), E.C. Knudson; Sanderson, 28 Sep. 1980 (1♂), (TLA). UVALDE CO., Sabinal, Sep. 1910 (1♀), Oct. 1909, 1910 (2♀), F.C. Pratt; Concan, 2 Oct. 1994, C. Bordelon (CWB). WEBB CO., Laredo (LACM). VAL VERDE CO., Amistad, 5 Oct. 1994, J. Slotten (JFS). WICHITA CO., Wichita Falls (AMNH). **UTAH:** [no specific locality], 26 Aug. 1902 (1♀), 30 Aug. 1902 (1♂), O. C. Poling. CACHE CO., Logan, 15 Aug. 1937, H. F. Thornley (USU). JUAB CO., Eureka, 16 Aug. 1911 (1♂), 16 Aug. 1920 (3♂), 16 Aug. 1921 (1♀), 18 Aug. 1911 (1♂, 1♀), 23 Aug. 1920 (2♂), 26 Aug. 1921 (1♂), male genitalia slide USNM 46837, T. Spalding, 14 Aug. 1920, 7 Sep. 1920, T. Spalding (BYU); Mona, 14 Aug. 1929, Pack (USU). MILLARD CO., Fillmore, 20 Aug. 1941, H. F. Thornley (USU); Lynndyl, 12 Aug. 1941, H.F. Thornley (USU). SALT LAKE CO. Salt Lake City, 11–17 Aug. 1976, Knowlton & Crowe, 16–22 Aug. 1975, Knowlton & Stephens, 25–31 Aug. 1976, Knowlton & Crowe (USU). SANPETE CO, Mayfield, 14 Aug. 1998 (2♀), J.M. Johnson (CEH). TOOELE CO., Stockton, 4 Aug. 1912 (USU), 19 Aug. 1903 (1♂, 1♀), T. Spalding, 24–30 Aug (1♂), male genitalia slide USNM 46841, 17 Sep. (2♀), 24 Sep. 1904 (1♀), T. Spalding; Dugway Proving grounds, East Dugway Dunes, 4 Aug. 1999, R. L. Johnson (BYU). UTAH CO., Salt Lake City, 20 Aug. 1914 (1♀), V. Fermekes (CNC); Vineyard, 14 Aug. 1912 (1♀), 16 Aug. 1912 (2♂), (CNC), 11 Aug. 1917 (1♀), 16 Aug. 1912 (1♂, 2♀), male genitalia slide USNM 46817, 1 Sep. 1912 (1♀), T. Spalding; Spanish Fork, 16 Aug. 1936 (1♀), T. Spalding; Dividend, 11 Aug. (1♂), 19 Aug. (1♂), T. Spalding; Provo City County Bldg., 28 Aug. 1981, C.A. Miles (BYU); Provo, Public Works, 21 Aug. 2002 (1♂), R.C. Mower (CEH); American Fork, 11 Aug. 1936, H.F. Thornley (USU); Spanish Fork, 1936, G.F. Knowlton (USU). WASHINGTON CO., St. George, 22 Aug. 1941, H.F. Thornley (USU). **WISCONSIN:** BROWN CO., [no specific locality], 1 Aug. 1957, L.W. Griewisch (UWM). COLUMBIA CO., [no specific locality], 24 Sep. 1958, P. Smith (UWM). DANE CO., Univ. Of Wisconsin arboretum, 19 Aug. 1946 (UWM). DOOR CO., [no specific locality], 26 Aug. 1961, E.R. Oatman (UWM). DOUGLAS CO., Wascott Twp., 31 Aug. 1966, J.L. Boughner (AME). MILWAUKEE CO., [no specific locality] (MPM).

Discussion. It is curious that Hardwick (1996) synonymized *albafascia* with *tertia* when there are distinct maculation and genitalic differences, whereas he treated *S. megarena* Smith as a valid species when there are no genitalic differences and the variation in wing maculation that occurs in *megarena* is found throughout the range of *tertia*. Historically, *megarena* was always treated as a subspecies of *tertia* (Barnes and McDunnough

1917, Franclemont and Todd 1983). Poole (1989) synonymized all subspecies and this was repeated by Poole and Gentili (1996).

The distribution of the presumed host plant of *tertia*, *Liatris punctata*, fits well with the distribution of *tertia* east of the Rocky Mountains, but a different host must be used west of the Rockies. More research is needed to discover the western host plant of *tertia*.

The figures in Hardwick (1996) referring to *S. tertia* (F10, W1, W2) are actually *S. albafascia*.

***Schinia albafascia* Smith, revised status**

(Figs. 7–9, 21, 27–28, 36, 39, 47)

Schinia albafascia Smith 1883:231.—Smith 1893:279.—Dyar 1903:188.—Holland 1903:228.—Barnes and McDunnough 1917:39.—McDunnough 1938:105.—Franclemont and Todd 1983:159.—Poole 1989:892.—Poole and Gentili 1996:771.—Hardwick 1996:176.

Diagnosis. *Schinia albafascia* shares the large quadrate discal spot in the hindwing with *S. brunnea* Barnes and McDunnough, but the discal spot can be contiguous with the wide marginal band in *brunnea*, whereas the discal spot is never contiguous with the narrow marginal band in *albafascia*. The second sternite in *albafascia* has a well-developed hair pencil and associated scent pocket that extend closer to the distal margin of sternite 4 (Fig. 21); in *brunnea* the scent pocket is slightly smaller and the hair pencil is less dense (Fig. 24). The valve is slightly longer in *brunnea* (mean length $2.55 \text{ mm} \pm 0.063$) than in *albafascia* (mean length $2.41 \text{ mm} \pm 0.129$) and also narrower (length $8.65 \pm 1.29 \times$ width ($n=6$)) than in *albafascia* (length $7.78 \pm 0.99 \times$ width ($n=9$)). The V-shaped saccus is slightly narrower in *albafascia* than in *brunnea*. The width of the female papillae anales is narrower and the apex is slightly more pointed in *albafascia* (Fig. 39) than in *brunnea* (Fig. 44).

Description. *Abdomen* (Fig. 21): Second sternite with well-developed hair pencil and scent pocket. *Male genitalia* (Figs. 27–28): Uncus moderately long, length 0.85–0.90 mm (mean = 0.87 ± 0.043 ; $n=9$); valve moderately long, length 2.20–2.55 mm (mean = 2.47 ± 0.137 ; $n=9$), length $7.78 \pm 0.99 \times$ width ($n=9$); saccus narrowly V-shaped; vesica with 3 coils. *Female genitalia* (Figs. 36, 39): Papillae anales broadly triangulate, apex pointed; eighth segment with coarse scobinations; seventh segment with slender, moderately long setae in several rows along distal margin, concentrated dorsally on segment, extending to or just before distal margin of eighth segment.

Type material. Holotype male, in USNM. Type locality: Utah [no specific locality]. Type examined.

Larval food plant. *Ericameria nauseosa* (Pallas ex Pursh) Nesom & Baird (Asteraceae).

Biology. *Schinia albafascia* utilizes Rabbit brush, *Ericameria nauseosa* (Asteraceae), as its larval food plant. Of the 22 varieties of Rabbit brush currently recognized, *albafascia*

uses at least three. *Ericameria nauseosa* (Pallas ex Pursh) Nesom & Baird ssp. *nauseosa* Nesom & Baird var. *speciosa* (Nutt.) Nesom & Baird and var. *hololeuca* (A. Gray) Nesom & Baird supports the lighter phenotype in desert scrub habitats from the western part of its range. The variety *glabrata* (A. Gray) Nesom & Baird supports the darker phenotype from the Colorado foothills into New Mexico and Arizona.

Adults of *albafascia* are most active on Rabbit brush towards dusk, where they rest on top of flower heads that are approaching full bloom. They are very wary, and readily fly off when approached.

Throughout most of its range, *albafascia* flies sympatrically with *S. unimacula* Smith, and a week or two earlier than *S. walsinghami* (Hy. Edwards), which also uses Rabbit brush as a larval host.

Flight period. Late summer and early fall, with records from mid-July to early October, most specimens collected during August and September. *Schinia albafascia* peaks in early September versus late August for *S. tertia* (Fig. 45).

Distribution (Fig. 47). From southwestern Montana and Idaho, west to Oregon, south to central and southern California, east to Arizona, New Mexico, and Colorado.

Material examined. **ARIZONA:** No specific locality (1♂, 4♀), Barnes Collection. APACHE CO., White Mtns., nr. McNarry PO, 15–30 Sep. 1925 (1♀), O.C. Poling. COCHISE CO., Huachuca Mtns., 0.5 mi W Hwy. 92, Lot 4, Ash Canyon Road, 5100 ft., Sep. 1980 (2♂), 27 Sep. 1989 (2♂), N. McFarland (CEH), 22 Aug. 1989, 21 Sep. 1989, N. McFarland (UAT); Paradise, (2♂), male genitalia slide USNM 46825, Barnes Coll., 1925 (1♀), O. Duffner, Sep. (4♂), 8–15 Sep. (1♂), Barnes Coll.; Portal, 2–3 Aug. 1999, C. W. Bordelon (TLS). COCONINO CO., Cameron, nr. Little Colorado River, 4280 ft., 7 Sep. 1995, J.K. Adams (JKA); Colorado River, Grand Canyon National Park, mi 8.0 L, old high water, 30 Aug. 2002 (1♀), R.J. Delph (NAU). MARICOPA CO., Tempe, 15 Aug. 1959, F.G. Werner & W.L. Nutting (UAT), 11 Sep. 1992, E.V. Walter & M. Martinez (UAT); Phoenix, (1♀), 2 Sep. 1905 (1♀) (CNC), 13 Sep. 1904 (1♀), 24–30 Sep. (1♀). MOHAVE CO., [No specific locality], 16–23 Sep. (1♀), Barnes Collection; Kingman, 1–8 Oct. (1♂, 1♀); Lake Havasu City, 2255 College Ave., 21 Oct. 1992, R. Gillmore (JFS). PIMA CO., Organ Pipe National Monument, Quitobaquito Mgmt. Area, 23 Sep. 1984, Bailowitz (UAT); Tucson, 30 Oct. 1977, F.G. Werner (UAT); Baboquivari Mtns. (LACM). PINAL CO., Pinal Mtns. (LACM). SANTA CRUZ CO., Madera Canyon (LACM); Harshaw Wash, S of Patagonia, 4600 ft., 17 Sep. 1992 (2♂), D. F. & V. Hardwick (CNC). **CALIFORNIA:** KERN CO., 38 mi E Baker, 10 Sep. 1934 (1♀), R.R. McElvare; Walker Pass (AMNH); Mt. Pinos, McGill Campground, 7310 ft., 10 Aug. 1996, T. E. Dimock (TED). LOS ANGELES CO., Mint Canyon, 17 Oct. 1941 (1♂); summit of Mint Canyon, 6 Oct. 1950 (1♀); Palm Village, 6 Oct. 1946 (1m 1♀). MONO CO., 1 mi N Lee Vining, on shore of Mono Lake, 4 Sep. 1978, R. Holland (AMNH). RIVERSIDE CO., Palm Springs (AMNH); Rancho La Sierra (AMNH); Aguanga, R.H. Leuschner (RHL). SAN BERNARDINO CO., Ivanpah Mts., 5 Sep. 1934 (6♂, 1♀), male genitalia slide USNM 46814, 10

Sep. 1934 (1♂, 3♀), 15 Sep. 1934 (1♂), R.R. McElvare; eastern Mohave Desert, Ivanpah, 3700 ft., Oct. 1990, D.F. Hardwick (CNC); Ivanpah, June 1991 (1♂, 2♀) (CNC); Ivanpah, New York Mountains, 3700 ft., 14 Sep. 1990 (3♂), D. & V. Hardwick (CNC); Loma Linda, 16–23 Sep. (2♂), male genitalia slide USNM 47133, Barnes Coll.; New York Mountains, 4400 ft., 24 Sep. 1990 (1♂, 1♀), D. & V. Hardwick (CNC); Wheaton Springs, Mescal Range, 5 Sep. 1953 (1♂, 1♀). SAN DIEGO CO., Warner's, Sep. 1919 (4♂, 4♀), G. H. Field; Julian (AMNH). TULARE CO. Kennedy Meadows (LACM). VENTURA CO., Apache Canyon, 5 Sep. 1997, T.E. Dimock (TED); Cuyama Valley, Apache Canyon 0.8 mi E of Hwy. 33, 3500 ft., 26 Sep. 1997, T.E. Dimock (TED). **COLORADO:** No specific locality (7♂, 8♀). ADAMS CO., Bennett, Hwy. 36, nr. Post Office, 5547 ft., 31 Aug. 2001 (1♀), C. Harp (CEH). ALAMOS CO., Brandt Ranch, 2285 ♂, 15 Aug. 1992, J.H. Brandt & R. Peigler (DMNS). ARAPAHOE CO., S of Manilla, gas station, Hwy. I-70 at Manilla Rd., 5486 ft., 23 Aug. 1999 (1♂), C. Harp (CEH). BOULDER CO., Lyons, 16 Aug. 1973, Knowlton & Hanson (USU). DENVER CO., Denver (7♂, 5♀), male genitalia slide USNM 46816, female genitalia slide USNM 46819. FREMONT CO., 4.6 mi SE Salida on W side of US 50, 7100 ft., 22 Aug. 1997 (2♀), D.J. Wright (DJW). GARFIELD CO., Glenwood Springs, 24–30 July (1♂), 1–7 Aug. (1♀), 16–23 Aug. (1♂, 2♀), 8–15 Aug. (3♂), 20 Aug. 1895, Sep. 1895 (2♀), W. Barnes. JEFFERSON CO., Littleton, S. Wadsworth, s of C-470, Lockheed Martin Park, 5523 ft., 31 Aug. 2001 (1♂), 3 Sep. 2001 (2♀), 4 Sep. 2001 (1♂), 6 Sep. 2002 (3♂, 4♀), 8 Sep. 2002 (3♂, 9♀), C. Harp (CEH); Lakewood, 20 Aug. 1995, R. Peigler (DMNS). LA PLATA CO., Durango (1♀). LARIMER CO., Fort Collins (1♀), female genitalia slide USNM 46818; Fort Collins, 5100 Greenview Ct., 11 Aug. 1989, P.A. Opler (DMNS); east side of Hwy. #287, T10N R70W sec. 21, 5980 ft., 23 Aug. 1997, 26 Aug. 1998, C. Ferris (UWL). LINCOLN CO., Limon, gas station, S of I-70 @ exit 359, 5356 ft., 19 Aug. 1998 (1♀), 27 Aug. 1999 (1♀), C. Harp (CEH). MESA CO., Colorado National Monument, headquarters nr. West Entrance, 30 Sep. 1996 (2♀), P. Opler & E. Buckner (CEH); Colorado National Monument, East Entrance, 4890 ft., 9 Aug. 1996 (1♀), Rodgers family (CEH). MOFFAT CO., Dinosaur National Monument, 2 Aug. 1992, H. Delafield Jr. (CSU). MONTEZUMA CO., 20 km W of Cortez, 3 Sep. 1989, R. Peigler & M. Weissman (AMNH), (DMNS), (MSU), (UCM). MORGAN CO., 12 mi SSW of Ft. Morgan, 16 Aug. 1990, M.D. Browers et al. (UCM). OTERO CO., Rocky Ford, 24 Aug. 1993, R. Peigler & M.J. Weissman (CSU). PUEBLO CO., 5 mi N Pueblo, 5100 ft., 22 Aug. 1975 (2♂), Lafontaine & Bowen (EHM), (CNC). WELD CO., 3 mi N of Windsor, 23 Aug. 1997, Pineda (CSU). **IDAHO:** BUTTE CO., Craters of the Moon National Monument, 25 July 1965, D.S. Horning (UIM). GOODING CO., Wendell, 3500 ft., 29 July 1965, R.E. Miller (UIM). ONEIDA CO., Curlew NG, 5 mi SSE Holbrook, 4800 ft., 18 July 2001 (1♀), 1 Aug. 2001 (2♂), D. J. Wright (DJW). PAYETTE CO., Parma, 2231 ft., 1 Sep. 1951, A.J. Walz (UIM). **MONTANA:** BROADWATER CO., Twp. 2N, Range 1E, 9 Aug. 1927 (1♂) (CNC). JEFFERSON CO. T2N R1W, 17–22 Aug. 1927 (MSUB), 8 Aug. 1927 (RH). **NEVADA:** CLARK CO., Searchlight, downtown school, along Hwy. #95,

3490 ft., 19 Sep. 2000 (1♀), C. Harp (CEH); Searchlight, N end of town off Hwy #95 at church, 19 Sep. 2000 (7♀), C. Harp (CEH); Searchlight, S end of town, along Hwy #95 at gas station, 19 Sep. 2000 (1♀), C. Harp (CEH); Newberry Mtns., Christmas Tree Pass Rd., 5.5 mi E of Hwy. #95, (1♂), 25 Sep. 1984, G.T. Austin (NSM); Hwy. #93, 6 mi N of I-15, 21 Sep. 1983, 21 Sep. 1984 (1♀), G.T. Austin (NSM); Hwy. #161, 2 mi W of Hwy. #159, 8 Oct. 1983, G.T. Austin (NSM). DOUGLAS CO., Topaz Lake, 25 Aug. 1983, G.T. Austin (NSM). ELKO CO., Angel Lake road, above Wells, 7000 ft., 20 July 1971 (1♀), D.C. Ferguson; N end of Teano Range, Hwy. #244, 27 Aug. 1984, G.T. Austin (NSM). ESMERALDA CO., No specific locality (3♂, 3♀). HUMBOLDT CO., 6 mi N Winnemucca, 4400 ft., 20 Sep. 2001 (2♂), Crabo & Troubridge (LGC). LINCOLN CO., 4.9 mi S of Elgin, Meadow Valley Wash, 22 Sep. 1984, G.T. Austin (NSM); 4 mi SSE Alamo, 3600 ft., 27 Sep. 1969 (1♀), D. F. Hardwick (CNC); 8 mi S Pioche, 4900 ft., 3 Sep. 1965 (5♂), D. F. Hardwick (CNC); 10 mi E Panaca, 6500 ft., 1 Sep. 1965 (2♂), D. F. Hardwick (CNC). LYON CO., Hwy. #50A, 1.8 mi S of Hwy. #95 at Fernley, 7 Sep. 1984, G.T. Austin (NSM). NYE CO., Mercury, 26 Aug. 1959 (4♂, 1♀). STOREY CO., Six Mile Creek, 5600 ft., 29 Aug. 2000 (1♀), J. Troubridge (CNC). WASHOE CO., Reno, 16–23 Aug. (1♀); Toiyabe Mtns., Peavine Creek Cmgd., 29 Aug. 1984, G.T. Austin (NSM); Toiyabe Mtns., Jett Canyon, 24 Aug. 1984, G.T. Austin (NSM). **NEW MEXICO:** BERNALILLO CO., Albuquerque, Tijeras Canyon @ Four Hills, 5900 ft., 13 Sep. 1968, R. Holland (RHA). COLFAX CO., Cimarron, Hwy. #58 @ Hwy. #64, 6422 ft., 12 Aug. 2002 (1♀), C. Harp (CEH). GRANT CO., Gila R. W-L Area, 4400 ft., 24 Sep. 2003 (1♂, 1♀) MCKINLEY CO., Ft. Wingate, 1–15 Sep. (1♂). SANDOVAL CO., Jemez Springs, 8–15 Aug. (6♂, 1♀), male genitalia slides USNM 46829-30, 16–23 Aug. (14♂, 3♀), 28 Aug. 1916 (1♀); near Jemez Springs (1♂, 1♀), J. Woodgate; Albuquerque, Juan Tabo Picnic area, west slope of Sandia Mtns., 7300 ft., 12 Sep. 1968, R. Holland (RHA). TAOS CO., Valdez, 10 Sep. 1964, B. Cambell (USU). **OREGON:** BAKER CO., Bridgeport, 3530 ft., 22 Aug. 2001 (5♂, 1♀), L.G. Crabo (LGC). HARNEY CO., dunes, 1 mi N of Denio, Nevada, 20 July 2001 (1♀), Lafontaine & Troubridge (CNC). JOSEPHINE CO., 8 Dollar Mtn. Rd., 1125 ft., 29 Aug. 2002 (1♂), J. Troubridge (CNC). KLAMATH CO., 12 mi E Klamath Falls, 6 Aug. 1966 (1♂, 1♀), K.J. Gaeden (ODA). LAKE CO., Alkali Lake, 4390 ft., 19 July 2001 (1♂), Troubridge, Crabo, & Lafontaine; 20 mi N Lakeview, 4 Aug. 1966 (1♂), K.J. Gaeden (ODA); S end of Summer Lake, 24 Aug. 1965 (1♀), K.J. Gaeden (ODA). MALHEUR CO., Namorf, 21 Aug. 2001 (8♂, 2♀), L.G. Crabo (LGC); Namorf, 2700 ft., 31 Aug. 2002 (3♂), J. Troubridge (CNC); Ontario, 10 Aug. 1963 (1♀), K.J. Gaeden (ODA). **UTAH:** southern (1♂), O.C. Poling. BEAVER CO., Milford, Aug. (1♀). BOX ELDER CO., Snowville, 14 Aug. 1971, G.F. Knowlton (USU). CACHE CO., Logan, 9 Aug. 1939, G.F. Knowlton (USU). DAGGETT CO., Brown's Park, 23 Aug. 1987, R.C. Mower (AMNH). EMERY CO., 2 air mi W of Little Gilson Butte, San Rafael Desert area, 15–17 Sep. 1980, D. Viers (USU). GARFIELD CO., 2 mi NW Hot Spring, 29 Aug. 1986 (3♂), male genitalia slide USNM 46815, A.S. Menke; Starr Springs, 36 mi S Hanksville, 6300

ft., 27 Aug. 1971 (1♀), D. F. Hardwick (CNC). JUAB CO., Eureka, 1 Aug. (4♂, 1♀), 2 Aug. (2♂, 3♀), 4 Aug. (1♂), 9 Aug. (1♂), 19 Aug. (1♂), T. Spaulding; Trout Creek, 20 July 1922, T. Spaulding (BYU). SANPETE CO., Ephraim Canyon, 6000 ft., 23 July 1981 (1♂), D.C. Ferguson; 2.5 mi N of Fairview, 17 Aug. 1990, R.C. Mower (BYU). SEVEIR CO., Richfield, 15 Aug. 1930 (2♂), 26 Aug. 1929 (1♀), D. E. Fox (CNC). UINTAH CO., vic. of Bonanza, 21 Aug. 1987, R.C. Mower (AMNH); Dinosaur National Monument, 17 Aug. 1958, M. May (AMNH). UTAH CO., Dividend, July (1♀), 14 July (1♀), 21 July (1♀), 22 July (1♂), 24 July (1♂), 11 Aug. (1♂), 24 Aug. 1921 (BYU), T. Spaulding; Orem, 12 July (1♂), 16 July (1♀), female genitalia slide USNM 46820, T. Spaulding, 9 Aug. 1936 (2♀), G.F. Knowlton. WASATCH CO., 5 mi S Midway, 29 July 1971 (1♂), male genitalia slide USNM 46827, D.C. Ferguson. WASHINGTON CO., Leeds Canyon, 6 June 1964, W.I. Ranson (USU); Zion National Park, Oak Creek, 3 Sep. 1981, C.R. Nelson (USU). WAYNE CO., Capitol Reef, 15 Sep. 1979, C. Hatley & G. Briggs (USU). **WYOMING:** FREMONT CO. [no specific locality], C.D. Ferris (CDF); 10 mi SE Lander, 5600 ft., 31 Aug. 1964 (1♀), D. F. Hardwick (CNC). JOHNSON CO. 32 mi E of Buffalo, roadside near Hwy. I-90, mkr. #89, at gas station lights, 3943 ft., 22 July 2003 (1♀), C. Harp (CEH). PLATTE CO. Glendo State Park, 15 July 1995, P.A. Opler (CSU). UINTA CO. Evanston, 25 July 1994, R.L. Langston (RLL). WASHAKIE CO. [no specific locality], C.D. Ferris (CDF).

Discussion. Hardwick (1996) treated *S. alba fascia* as a synonym of *S. tertia*. As discussed above, there are many differences that separate these two species. Smith (1883) pointed out the broader pale area of the forewing, which gives *S. alba fascia* its whiter appearance, and the more distinct discal spot and outer margin of the hindwing.

Schinia ferrisi, new species

(Figs. 11–12, 22, 29–30, 37, 40, 47)

Diagnosis. This species is easily confused with *alba fascia* but can be reliably separated by the lack of a hair pencil on the second sternite of the male. The hindwing discal spot in *ferrisi* is smaller, less quadrate, and more crescent-shaped than the bold quadrate spot in *alba fascia*. The marginal band in the hindwing is generally less bold and narrower in *ferrisi* than in *alba fascia*. *Schinia ferrisi* can be separated from *tertia* by the shorter uncus in the male genitalia.

Description. Adult Male. (Fig. 11). *Head.* Frons cream with closely appressed scales, ventral lip produced; vertex cream with broad flat scales, not appressed; labial palps cream; eyes large, round. *Thorax.* Scales cream mixed with pale rufous; foreleg cream suffused with light brown, tibia on medial margin with one elongate robust spine and 1–3 significantly smaller spines, spines on lateral margin variable with 1–2 thick ones near distal apex and 2–3 smaller ones dorsal to these; basitarsus longer than tibia, all tarsi light brown with white apical bands; middle leg cream, white apical band on tibia, tarsi cream with

white apical bands; hind leg white, tarsi white. *Forewing*. Length 9.0–11.0 mm (n=8); basal area brown, bordered distally by a few black scales, approximately 30% of wing length; median area white, enclosing reniform spot, width at reniform from 30 to 75% of wing length, at posterior margin width from 30–70% of posterior margin length, a thin line of brown scales at border of median area as it curves around reniform spot; orbicular spot faint, pale gray; reniform spot indistinct, bordered proximally and distally by a few black scales; a pale band with a few brown scales at costa, these scales become pale gray as they over scale the reniform spot and continue to posterior margin; subterminal band dark brown, follows curve of white median area, distal margin irregular; a narrow white band distal to subterminal band; outer margin light brown; small black spots between wing veins along outer margin; fringe light brown with a few white scales; underside white with an indistinct black scale patch between veins R and Cu; orbicular spot black; reniform spot black; submarginal band black. *Abdomen* (Fig. 22): Second sternite hair pencil absent; scent pocket present on fourth sternite and approximately same width as sternite. *Male genitalia* (Figs. 29–30): Uncus of moderate length, length 0.70–0.725 mm (mean = 0.708 ± 0.014 ; n=3); valve of moderate length, length 2.05–2.125 mm (mean = 2.08 ± 0.038 ; n=3), length 8.69 ± 0.83 X width (n=3); saccus V-shaped; vesica with 3 coils. *Female genitalia* (Figs. 37, 40): Papillae anales broadly triangulate, apex narrowly rounded; eighth segment with coarse scobinations; seventh segment with robust, moderate length setae in several rows along distal margin, concentrated dorsally on segment, extending to or beyond distal margin of eighth segment.

Type material. HOLOTYPE: ♂, Arizona, Pima Co., Redington, Barnes Collection, USNM ENT 00142672. Deposited in USNM.

PARATYPES: Same locality as type: 3 ♂ (ENT UNSM 142671, 142673-4), USNM genitalia slide 47328, 3 ♀ (ENT USNM 142675-7), USNM genitalia slides 47329, 47321 (USNM). **ARIZONA:** PIMA CO., 32° 26.92' N, 111° 01.33' W, 2910 ft., 13 Sep. 2003 (1 ♂), A.D. Zimmerman, 28 Sep. 2003 (1 ♂), C.D. Ferris (CDF). SANTA CRUZ CO., Santa Rita Mountains, 24 Sep. 1949 (2 ♂), genitalia slide USNM 47332, F.H. Parker (USNM); Pena Blanca Lake Campground, 3850 ft., 13 Sep. 1994 (1 ♀), T.E. Dimock (TED). **NEW MEXICO:** GRANT CO., 32° 50.86' N, 108° 35.55' W, 4390–4400 ft., 5 Sep. 2002 (2 ♂, 2 ♀), male genitalia slide MGP 1179, C.D. Ferris (CDF).

Larval host plant: Unknown.

Etymology: Clifford D. Ferris of Laramie, Wyoming sent me (MGP) specimens that I identified as *albafascia*. After Dr. Ferris insisted that they looked different, I dissected a male and found that there was no hair pencil, which is prominent in *albafascia*. We are honored to name this species after Dr. Ferris.

Flight period. This species flies throughout September (Fig. 45).

Distribution (Fig. 47). Known only from southeastern Arizona and southwestern New Mexico.

Discussion. The intensity of the hindwing marginal band is variable, ranging from well developed to faint; it may be almost absent in worn specimens. *Schinia albafascia* varies in the size and intensity of both the hindwing discal spot and the marginal band.

In reviewing maps (CEH) of Rabbit brush varieties; *Ericameria nauseosa nauseosa* var. *latisquamea* (A. Gray) Neesom & Baird overlaps the general distribution of *ferrisi*. It occurs in Santa Cruz, Pima, Cochise, Apache, and Navaho counties in Arizona; and San Juan, Rio Arriba, and McKinley counties in northwestern New Mexico.

***Schinia erosa* Smith**

(Figs. 17–18, 23, 31–32, 41, 43, 48)

Schinia erosa Smith 1906:23.—McDunnough 1938:105.—Todd 1982:76. —Poole 1989:894. —Poole and Gentili 1996:771.—Hardwick 1996:178.

Schinia albafascia erosa;—Barnes and McDunnough 1917:39.—Franclemont and Todd 1983:159.

Diagnosis. *Schinia erosa* looks like a washed out *S. brunnea*. The maculation consists of a reniform spot and in some specimens a faint orbicular spot, with rufous to cream ground color. *Schinia brunnea* has brown to reddish-brown ground color, an antemedial line, post-medial line, and darker areas in the subterminal area of forewing. The discal spot and marginal band in the hindwing are usually less distinct in *erosa* than in *brunnea*. The second sternite in the male abdomen has a vestigial hair pencil in *erosa* (Fig. 23), which is well developed in *brunnea* (Fig. 24). In the male genitalia, the most obvious difference is the much shorter uncus and valve in *erosa* (Fig. 31) than in *brunnea* (Fig. 33). In the female genitalia, the papillae anales are slightly larger and more slender with a shaper apex in *erosa* (Fig. 43); in *brunnea* (Fig. 44) they are somewhat shorter with a slightly more rounded apex.

Description. *Abdomen* (Fig. 23): Second sternite with vestigial hair pencil (usually only a few androconia) and well-developed scent pocket. *Male genitalia* (Figs. 31–32): Uncus short, length 0.70–0.85 mm (mean = 0.78 ± 0.051 ; n=6); valve short, length 2.15–2.35 mm (mean = 2.25 ± 0.089 ; n=6), length 7.65 ± 0.71 X width (n=6); saccus narrowly V-shaped; vesica with 3 coils. *Female genitalia* (Figs. 41, 43): Papillae anales broadly tri-angulate, apex pointed; eighth segment with coarse scobinations; seventh segment with robust, moderate length setae in several rows along distal margin, concentrated dorsally on segment, extending to or shorter than distal margin of eighth segment.

Type material. Lectotype male, in AMNH, designated by Todd (1982). Type locality: Utah [no specific locality]. Not examined.

Larval food plant. *Isocoma acradenia* var. *acradenia* (E. Greene) E. Greene (Asteraceae).

Biology. Hardwick (1996) gave a detailed description of the life history and larva of *erosa*. Larvae feed on the nominate variety of *Isocoma acradenia* (Greene) Greene (Asteraceae), Desert Golden-weed or Alkali Jimmy weed. Desert Golden-weed is a low shrub of

alkaline soils, growing along seeps, springs, roadsides, and disturbed areas. It is associated with *Atriplex*, *Artemisia* and *Elymus* (Kartesz 1987).

Flight period. The main flight seems to be from late summer into early November. Infrequent captures in early May probably are due to favorable weather conditions during particular years, and not evidence of a spring brood. The May specimens were collected only in 1918, the late summer and fall specimens were collected in several years (Fig. 45).

Distribution (Fig. 48). From desert areas east of the Peninsular Range of southern California and a single locality in south central Arizona.

Material examined. **ARIZONA:** MARICOPA CO., Phoenix, (1♂) male genitalia slide USNM 46826, 16–23 Sep. (1♂), male genitalia slide USNM 46845, Barnes Coll. **CALIFORNIA:** RIVERSIDE CO., Chino Canyon, nr. Palm Springs (2♂); Coachella, 21 Aug. 1936 (1♀); Indio (1♀), 1 May 1918 (3♂, 5♀), male genitalia slide USNM 46843, J.C. Bradley, Oct. (1♀), female genitalia slide USNM 47161, Barnes Coll., 23 Oct. 1911 (1♀), 27 Oct. 1911 (1♂), male genitalia slide USNM 46842, 30 Oct. 1923 (1♀), H.G. Dyar, 1 Nov. 1911 (1♀). **SAN BERNARDINO CO.,** San Bernardino, (1♂) male genitalia slide USNM 47160. **SAN DIEGO CO.,** Sentenac Canyon, 22 Sep. 1935 (1♂, 2♀), female genitalia slide USNM 47162, D. Meadows; The Narrows, 22 Sep. 1935 (1♂, 2♀), D. Meadows.

Discussion. The locality label of the lectotype specimen of *S. erosa* designated by Todd (1982) is "Utah", but this is probably erroneous because all other records are from the Colorado and Mojave deserts of southern California and adjacent Arizona. The other 2 syntypes, 1 male in USNM and 1 female in AMNH, are from Phoenix, Arizona, which is a more logical type locality.

Barnes and McDunnough (1917) treated *S. erosa* as a subspecies of *S. albafascia*, and this decision was followed by Franclemont and Todd (1983). Poole (1989) and Poole and Gentili (1996) synonymized all subspecies, treating *erosa* as a synonym of *albafascia*. Hardwick (1996) elevated *erosa* to species level based on host plant and distribution, and we agree with the latter on the basis of the host plant distribution and the characters discussed above.

***Schinia brunnea* Barnes and McDunnough, revised status**

(Figs. 12–16, 24, 33–34, 42, 44, 49)

Schinia brunnea Barnes and McDunnough 1913:104.—Barnes and McDunnough 1917:39.—McDunnough 1938:105.—Franclemont and Todd 1983:159.—Poole 1989:893.—Poole and Gentili 1996:771.—Hardwick 1996:178. [synonymy].

Diagnosis. The differences between *brunnea*, *albafascia*, and *erosa* are discussed above.

Description. *Abdomen* (Fig. 24): Second sternite with well-developed hair pencil and scent pocket. *Male genitalia* (Figs. 33–34): Uncus moderately long, length 0.85–0.90 mm

(mean = 0.875 ± 0.027 ; $n=6$); valve moderately long, length 2.45–2.65 mm (mean = 2.55 ± 0.063 ; $n=6$), length 8.65 ± 1.29 X width ($n=6$); saccus V-shaped; vesica with 3 coils. *Female genitalia* (Figs. 42, 44): Papillae anales broadly triangulate, apex narrowly rounded; eighth segment with coarse scobinations; seventh segment with robust, moderate length setae in several rows along distal margin, concentrated dorsally on segment, extending to or shorter than distal margin of eighth segment.

Type material. Lectotype male, in USNM, designated by Hardwick (1996). Type locality: Loma Linda, San Bernardino, California. Type examined.

Flight period. Late summer to early fall, with a peak from mid-September to mid-October (Fig. 45).

Distribution (Fig. 49). From desert areas west of the Peninsular Range and south of the Transverse Range of southern California.

Material examined. **CALIFORNIA:** LOS ANGELES CO., Azusa, 12 Oct. 1939 (1♂, 2♀), female genitalia slide USNM 43164; Glendale, 22 Sep. (1♀), female genitalia slide USNM 46821, E. D. Jones. ORANGE CO., Olive, 5 Sep. 1962 (1♀), J. Wilcox (CNC); Rancho Mission Viejo, 23–25 Sep. 1999 (1♂), male genitalia slide MGP 11142 (CEH), 14–20 Sep. 1999 (2♂) (CNC), 15–18 Sep. 1999 (15♂, 3♀), male genitalia slide MGP 1150 (CSU), 15–18 Sep. 1999 (2♂) (CNC), N. Bloomfield. RIVERSIDE CO., Riverside, 11 Sep. 1946 (1♂), G. H. & J. L. Sperry. SAN BERNARDINO CO., Loma Linda, 8–15 Sep. (4♂, 1♀), male genitalia slides USNM 47156–8, female genitalia slide USNM 46839, 16–23 Sep. (1♀), 28 Sep. (1♀), 8–15 Oct. (4♀), female genitalia slide USNM 47163, Barnes Coll.; San Bernardino, (1♂), 8–15 Oct. (3♂), Barnes Coll. SAN DIEGO CO., Dulzura, 15 Sep. 1926 (1♂, 1♀), Barnes Coll.; San Diego, (6♂) genitalia slides USNM 46838, 47155, 47159, Barnes Coll.; Warner's, Sep. 1919 (1♂), G. H. Field.

Discussion. Hardwick (1996) synonymized *brunnea* with *erosa* but gave no explanation for this decision. The male genitalia in *brunnea* are actually more similar to those of *albafascia* than those of *erosa*. The main differences are in the valve, which is narrower in *brunnea* and wider in *albafascia*, and in the saccus, which is narrower in *albafascia* and slightly wider in *brunnea*. Several specimens from Orange and Los Angeles counties have a darker brown ground color in the forewing than typical specimens from San Diego and San Bernardino counties, which have a dark reddish-brown ground color. In addition, there are some specimens from Orange County that are intermediate between the reddish and dark brown specimens.

The distribution of *brunnea* is west of the Peninsular Range and south of the Transverse Range in southern California; *erosa* is distributed in the deserts east of the Peninsular Range.

Acknowledgments

We thank Lars Crabo and Eric Metzler for supplying additional distribution records and

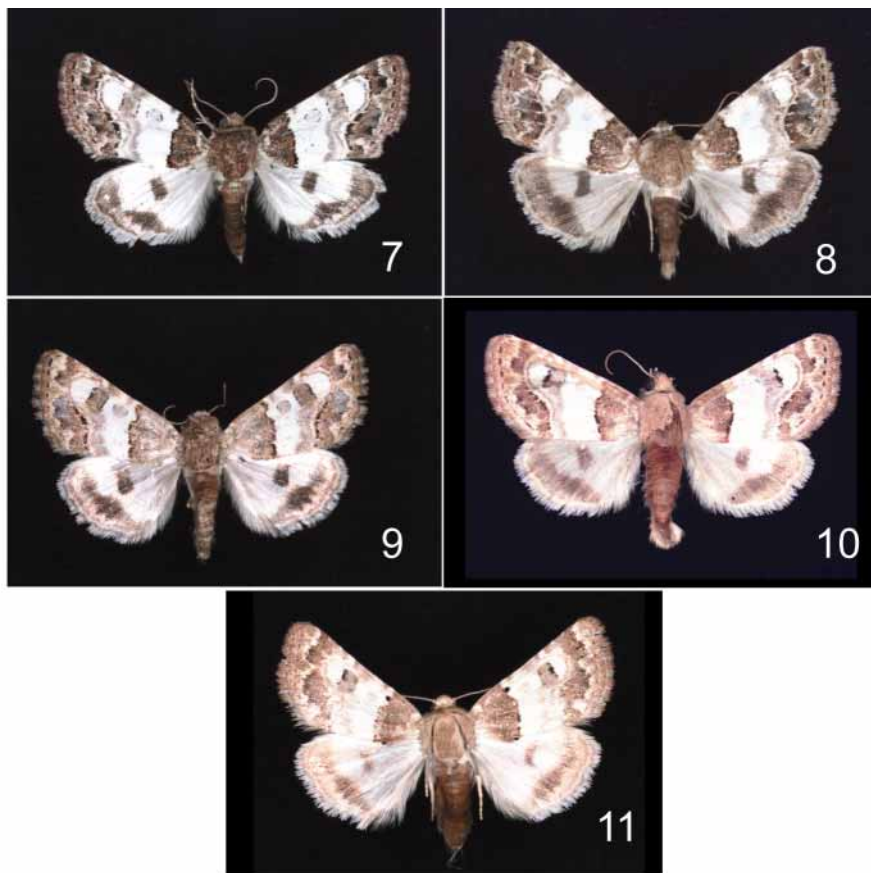
Eric L. Quinter of the American Museum of Natural History, New York, New York for comparing the lectotypes of *S. erosa* and *S. megarena*. For critically reviewing a draft of this paper, we thank J. K. Adams, Calhoun, GA; J. D. Lafontaine, Ottawa, Ontario; and D. A. Nickle, Systematic Entomology Laboratory, U.S.D.A., Beltsville, MD; J. W. Brown and D. R. Smith, Systematic Entomology Laboratory, U.S.D.A., Washington, D.C.

Literature Cited

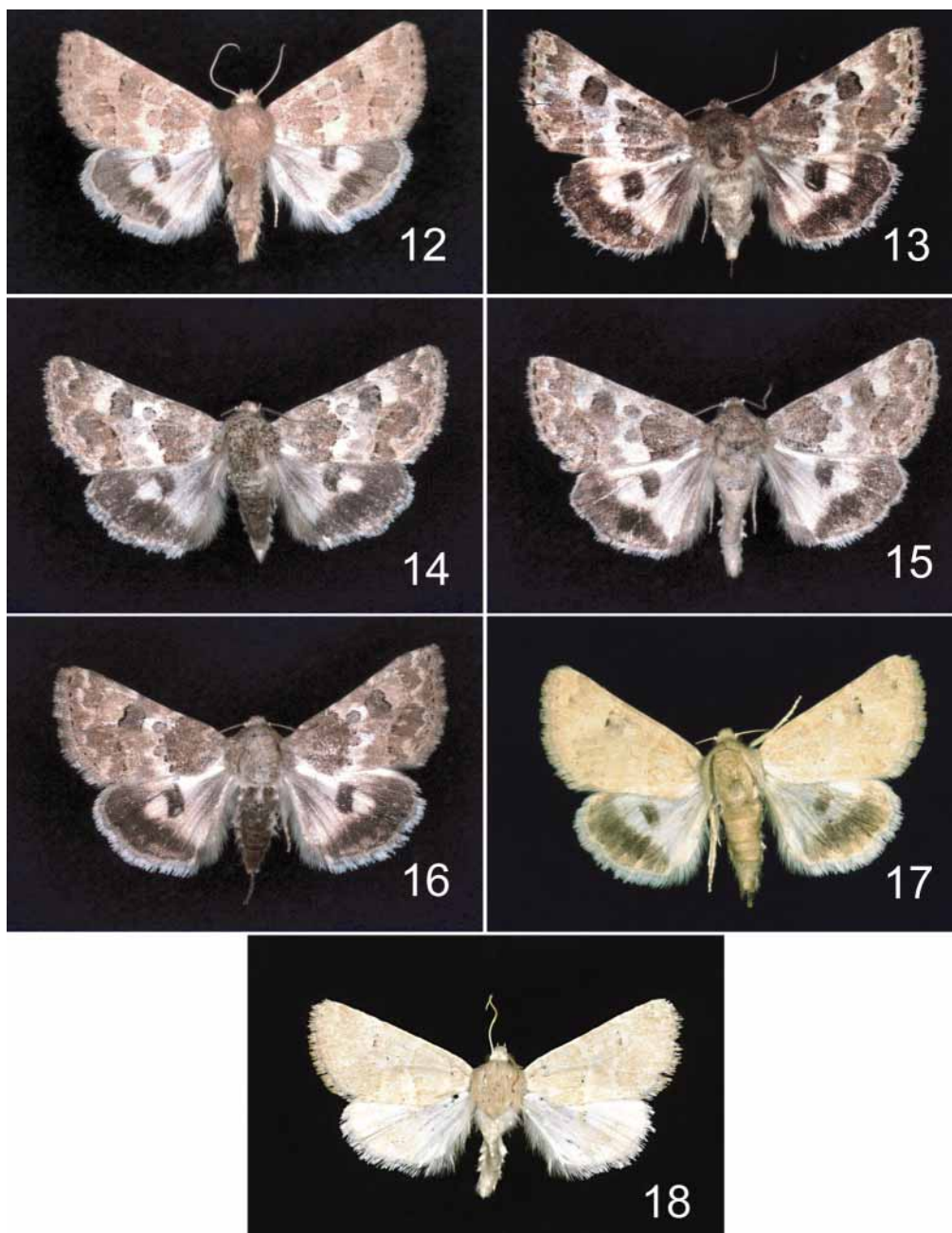
- Barnes, W. & McDunnough, J. (1913) New N. Am. Lepidoptera with notes on described species. *Contributions to the Natural History of the Lepidoptera of North America*, 2(3), 93–162, 9 plates.
- Barnes, W. & McDunnough, J. (1917) *Check list of the Lepidoptera of boreal America*. Herald Press, Decatur, Illinois. ix, 392 pp.
- Dyar, H.G. (1903) A list of North American Lepidoptera and key to the literature of this Order of insects. *Bulletin of the United States National Museum*, 52: i–xi, 1–723. [Imprint 1902].
- Franclemont, J.G. & Todd, E.L. (1983) Noctuidae. In: Hodges, R.W., Dominick, T., Davis, D.R., Ferguson, D.C., Franclemont, J.G., Munroe, E.G. & Powell, J.A. (Eds.) *Check list of the Lepidoptera of America North of Mexico*. University Press, Cambridge, pp. 120–159.
- Grote, A.R. (1874) New species of North American Noctuidae. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 26, 197–214.
- Grote, A.R. (1875) Supplement to the list of North American Noctuidae. *Bulletin of the Buffalo Society of Natural Sciences*, 2, 209–223.
- Hardwick, D.F. (1996) *A Monograph to the North American Heliothentinae (Lepidoptera: Noctuidae)*. David F. Hardwick, Ottawa, Ontario, 281 pp.
- Harvey, L.F. (1875) On Texan Lepidoptera collected by Mr. Belfrage. *Bulletin of the Buffalo Society of Natural Sciences*, 3: 3–16.
- Holland, W.J. (1903) *The Moth Book*. Doubleday, Page, and Co. New York, 479 pp.
- Kartesz, J.T. (1987) *A Flora of Nevada*. Unpublished Ph.D. Dissertation, University of Nevada, Reno.
- Knudson, E., Bordelon, C. & Pogue, M.G. (2003) A new species of *Schinia* Hübner (Lepidoptera: Noctuidae: Heliothinae) from Texas, Oklahoma, and Louisiana. *Zootaxa*, 382, 1–7.
- McDunnough, J. (1938) Checklist of the Lepidoptera of Canada and the United States of America. Part 1. Macrolepidoptera. *Memoirs of the Southern California Academy of Sciences*, Vol No?, 1–275.
- Pogue, M.G. & Harp, C.E. (2003a) Revised status of *Schinia unimacula* Smith (Lepidoptera: Noctuidae: Heliothinae). *Zootaxa*, 226, 1–8.
- Pogue, M.G. & Harp, C.E. (2003b) Systematics of *Schinia cupes* (Grote) complex: Revised status of *Schinia crotchii* (Hy. Edwards) (Lepidoptera: Noctuidae: Heliothinae). *Zootaxa*, 294, 1–16.
- Pogue, M.G. & Harp, C.E. (2003c) A review of the *Schinia regia* (Strecker) species complex with a description of a new species (Noctuidae: Heliothinae). *Journal of the Lepidopterists' Society*, 57, 197–203.
- Poole, R.W. (1989) *Fascicle 118, Noctuidae. Lepidopterorum Catalogus (New Series)*. E.J. Brill and Flora and Fauna Publications, Leiden. xii, 1313 pp.
- Poole, R.W. & Gentili, P. (Eds.) (1996) *Nomina Insecta Nearctica. A check list of the insects of North America, Volume 3: Diptera, Lepidoptera, Siphonaptera*. Entomological Information Services, Rockville, Maryland, 1143 pp.
- Smith, J.B. (1883). Synopsis of the North American Heliothinae. *Transactions of the American Entomological Society*, 10, 205–256.
- Smith, J.B. (1891) *List of Lepidoptera of Boreal America*. P.C. Stockhausen, Philadelphia, v + 124 pp.
- Smith, J.B. (1893) A catalogue, bibliographical and synonymical, of the species of moths of the Lepidopterous superfamily Noctuidae, found in boreal America. *Bulletin of the United States National Museum*, 44, 1–424.
- Smith, J.B. (1906) New Noctuidae for 1906. No. 1. *Journal of the New York Entomological Society*, 14, 9–30.
- Todd, E.L. (1982) The noctuid type material of John B. Smith (Lepidoptera). *United States Department of Agriculture, Technical Bulletin*, 1645, 1–228.



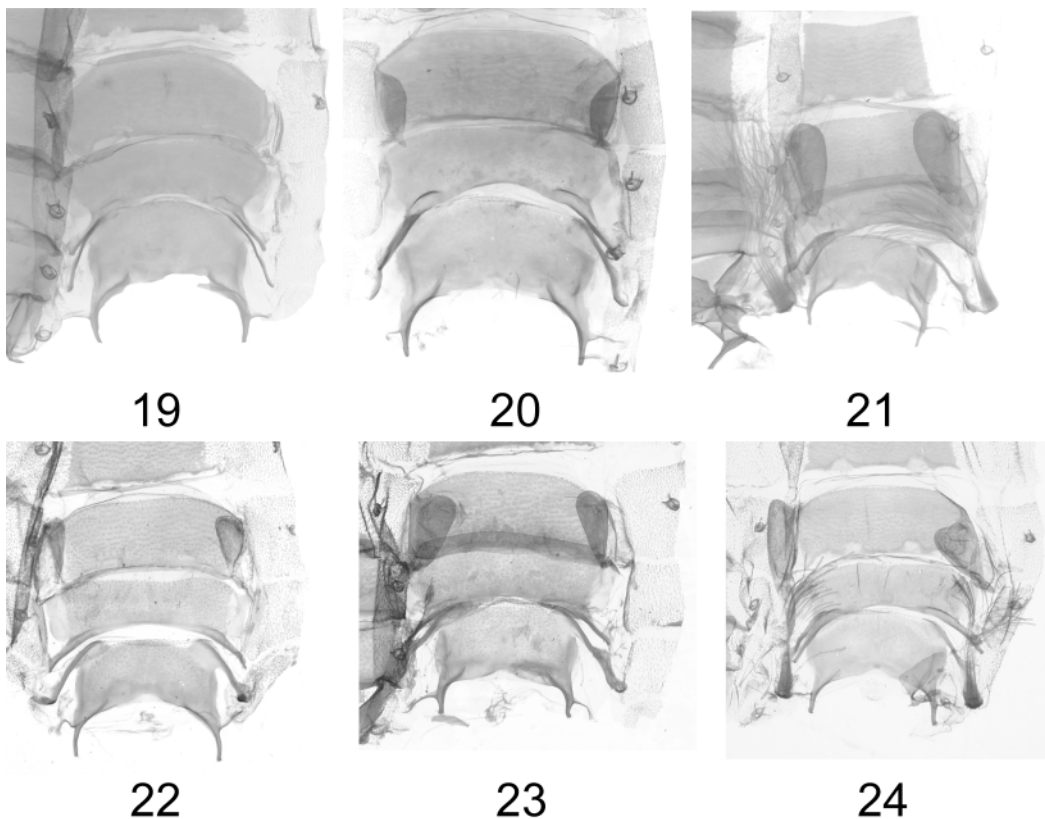
FIGURES 1–6. Adults of *Schinia tertia* (Grote). 1, male, Missouri, Jackson Co., Independence, USNM ENT 00142883; 2, female, Missouri, Jackson Co., Independence, USNM ENT 00142884; 3, male, Illinois, Putnam Co., USNM ENT 00142856; 4, female, Texas, Kerr Co., Kerrville, USNM ENT 00142780; 5, male, California, San Bernardino Co., Loma Linda, USNM ENT 00143219; 6, female, Utah, Utah Co., Vineyard, USNM ENT 00143239.



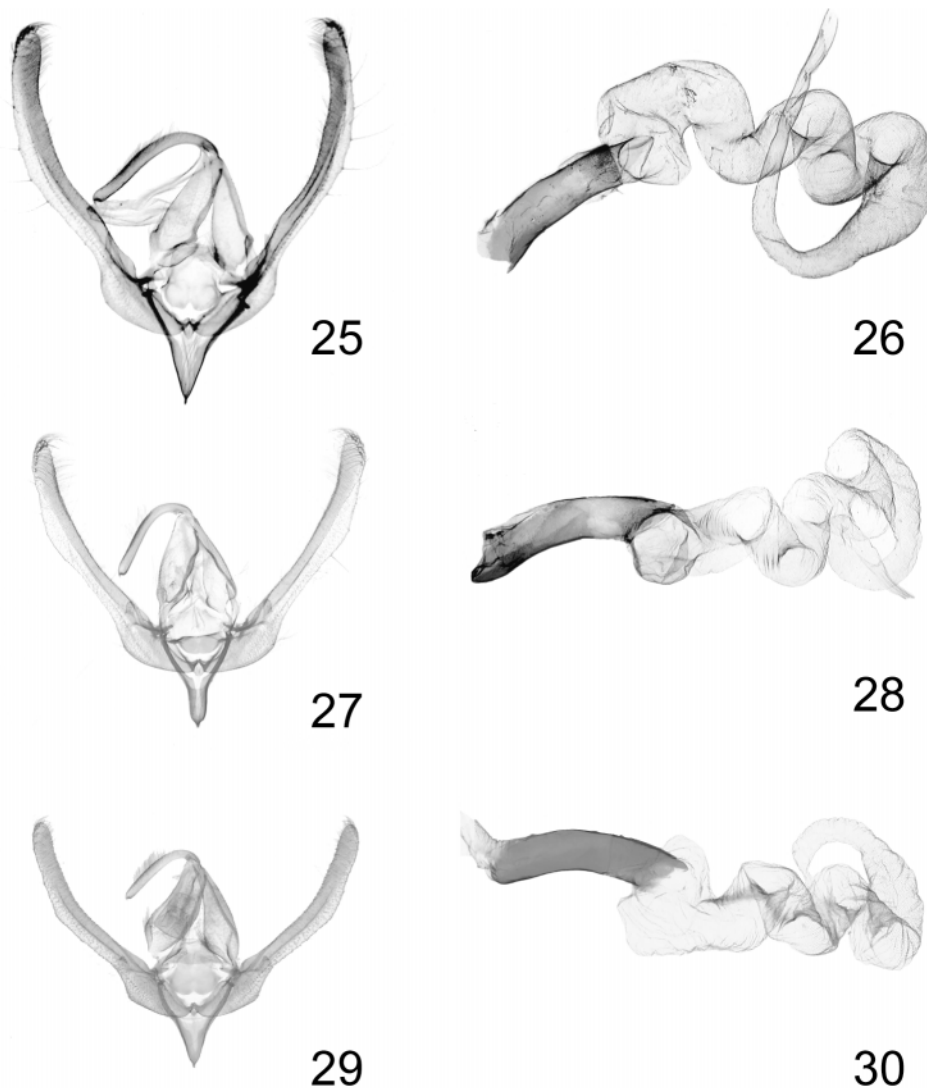
FIGURES 7–11. Adults. 7, *S. alba fasciata*, female, Colorado, Adams Co., Bennett, Hwy. #36 near post office, USNM ENT 00157059; 8, *S. alba fasciata*, female, Nevada, Clark Co., off Hwy. #95 at church, USNM ENT 00157279; 9, *S. alba fasciata*, female, Nevada, Clark Co., off Hwy. #95 at church, USNM ENT 00157280; 10, *S. ferrisi*, holotype, male, Arizona, Pima Co., Redington, USNM ENT 00142672; 11, *S. ferrisi*, female, New Mexico, Grant Co., USNM ENT 00219911.



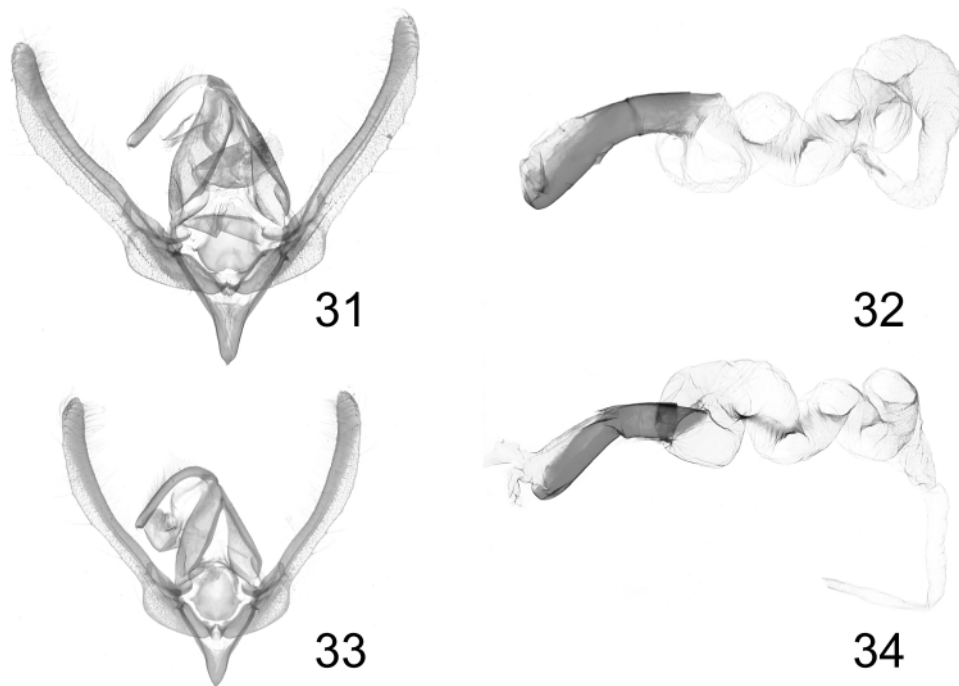
FIGURES 12–18. Adults. 12, *S. brunnea*, male, lectotype, California, San Bernardino Co., Loma Linda, USNM ENT 00219116; 13, *S. brunnea*, female, California, Orange Co., Rancho Mission Viejo, USNM ENT 00157286 (CEH); 14, *S. brunnea*, male, California, Orange Co., Rancho Mission Viejo, USNM ENT 00218692; 15, *S. brunnea*, male, California, Orange Co., Rancho Mission Viejo, USNM ENT 00218693; 16, *S. brunnea*, male, California, Orange Co., Rancho Mission Viejo, USNM ENT 00218694; 17, *S. erosa*, female, California, Riverside Co., Indio, USNM ENT 00143201; 18, *S. erosa*, male, California, San Diego Co., Sentenac Canyon, USNM ENT 00143184.



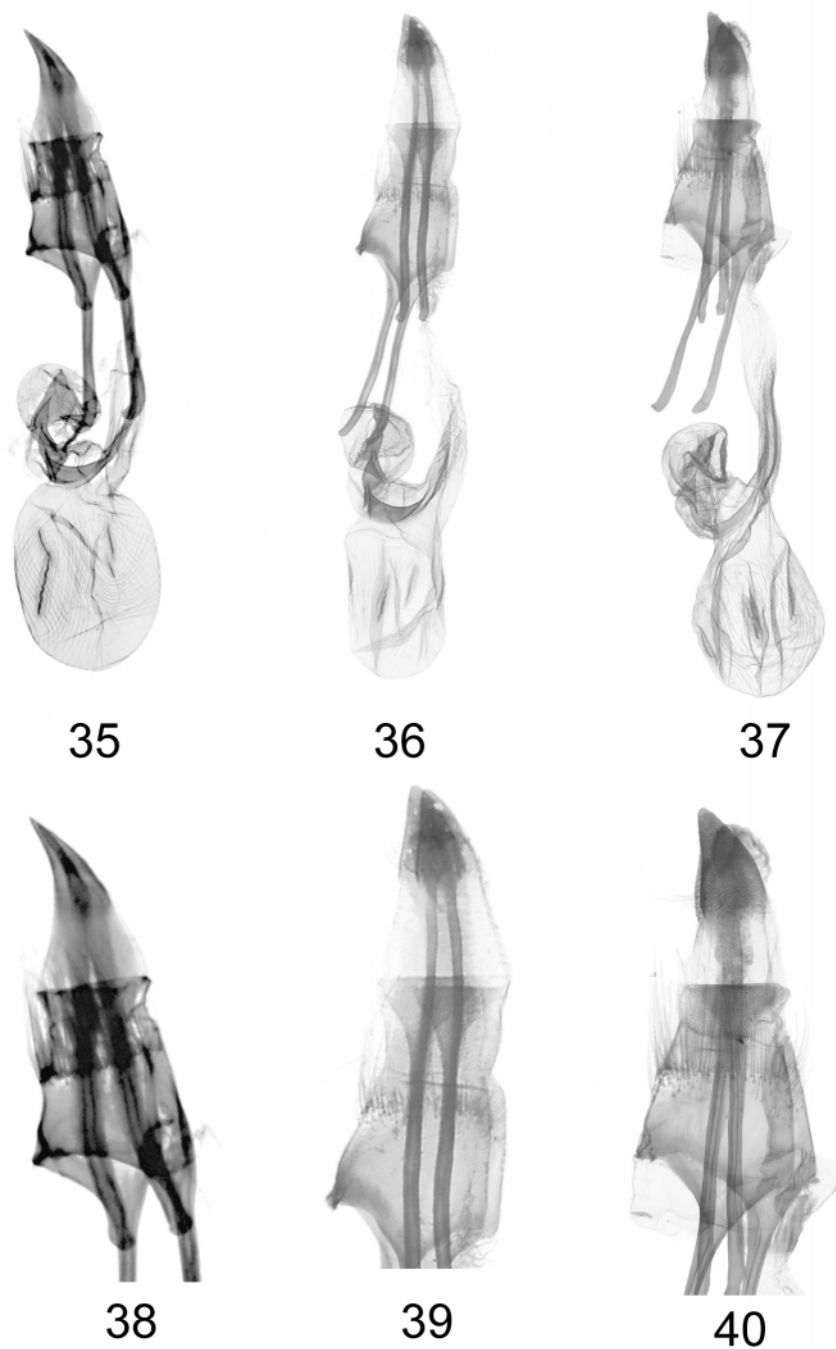
FIGURES 19–24. Second sternite of male abdomen. 19, *Schinia terttia*, Texas, Brazos Co., College Station, USNM ENT 00142720, genitalia slide USNM 46835; 20, *S. terttia*, Utah, Utah Co., Vineyard, USNM ENT 00143238, genitalia slide USNM 46817; 21, *S. albafascia*, California, San Bernardino Co., Ivanpah Mts., USNM ENT 00142700, genitalia slide USNM 46814; 22, *S. ferrisi*, Arizona, Pima Co., Redington, USNM ENT 00142671, genitalia slide USNM 47328; 23, *S. erosa*, California, Riverside Co., Indio, USNM ENT 00143200, genitalia slide USNM 46842; 24, *S. brunnea*, California, San Bernardino Co., San Bernardino, USNM ENT 00143179, genitalia slide USNM 47156.



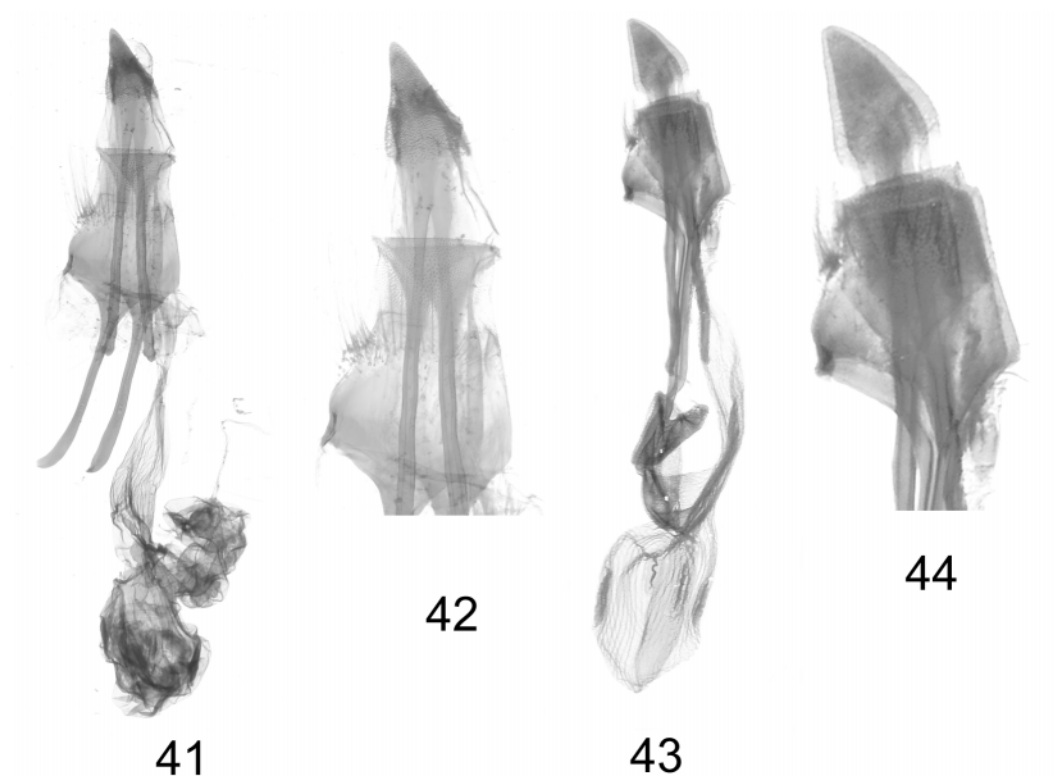
FIGURES 25–34. Male genitalia. 25, *Schinia tertia*, Texas, Brewster Co., Alpine, USNM ENT 00142723, genitalia slide USNM 46833; 26, *S. tertia*, aedeagus, Texas, Carson Co., White Deer, USNM ENT 00142739, genitalia slide USNM 46836; 27, *S. albafascia*, Utah, Wasatch Co., Midway, USNM ENT 00142986, genitalia slide USNM 46827; 28, *S. albafascia*, aedeagus, same data; 29, *S. ferrisi*, Arizona, Pima Co., Redington, USNM ENT 00142671, genitalia slide USNM 47328; 30, *S. ferrisi*, aedeagus, same data.



FIGURES 31–34. Male genitalia. 31, *S. erosa*, California, San Bernardino Co., San Bernardino, USNM ENT 00143212, genitalia slide USNM 47160; 32, *S. erosa*, aedeagus, same data; 33, *S. brunnea*, California, Orange Co., Rancho Mission Viejo, USNM ENT00143018, genitalia slide MGP 1142 (CEH); 34, *S. brunnea*, aedeagus, California, San Bernardino Co., San Bernardino, USNM ENT 00143179, genitalia slide USNM 47156.



FIGURES 35–40. Female genitalia. 35, *Schinia tertia*, Kansas, Labette Co., Oswego, USNM ENT00142861, genitalia slide USNM 46832; 36, *S. albafascia*, Utah, Utah Co., Orem, USNM ENT00143001, genitalia slide USNM 46820; 37, *S. ferrisi*, Arizona, Pima Co., Redington, USNM ENT 00142675, genitalia slide USNM 47329; 38, *S. tertia*, papillae anales, same data as Fig. 35; 39, *S. albafascia*, papillae anales, same data as Fig. 36; 40, *S. ferrisi*, same data as Fig. 37.



FIGURES 41–44. Female genitalia. 41, *S. erosa*, California, San Diego Co., Sentenac Canyon, USNM ENT 00143186, genitalia slide USNM 47162; 42, *S. brunnea*, California, San Bernardino Co., Loma Linda, USNM ENT 00143167, genitalia slide USNM 46839; 43, *S. erosa*, papillae anales, same data as Fig. 41; 44, *S. brunnea*, papillae anales, same data as Fig. 42.

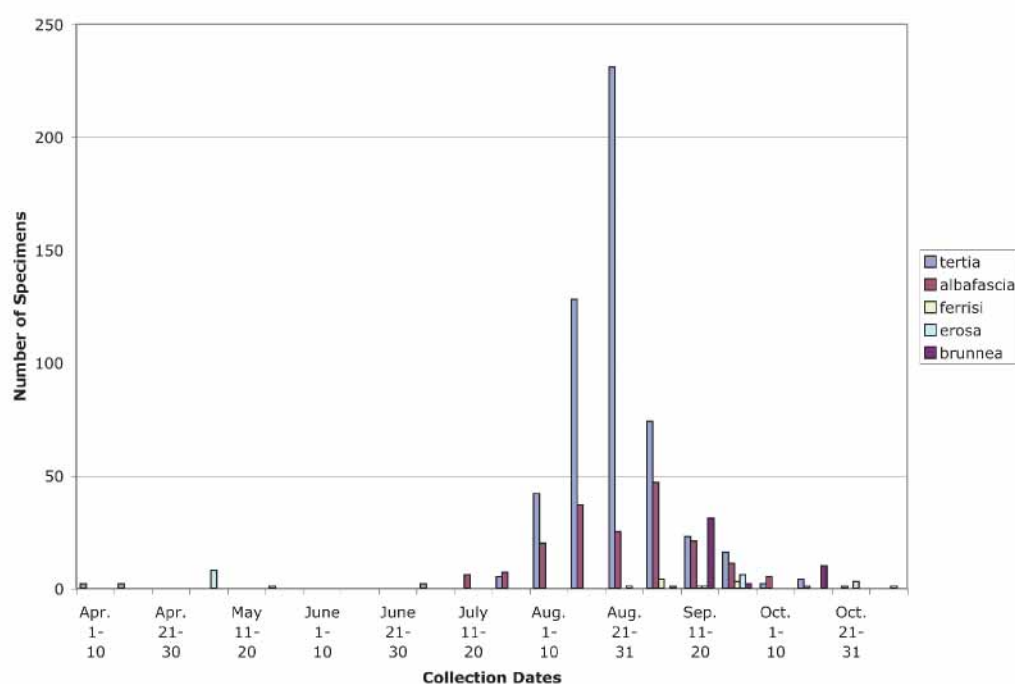


FIGURE 45. Flight periods of *Schinia* species.

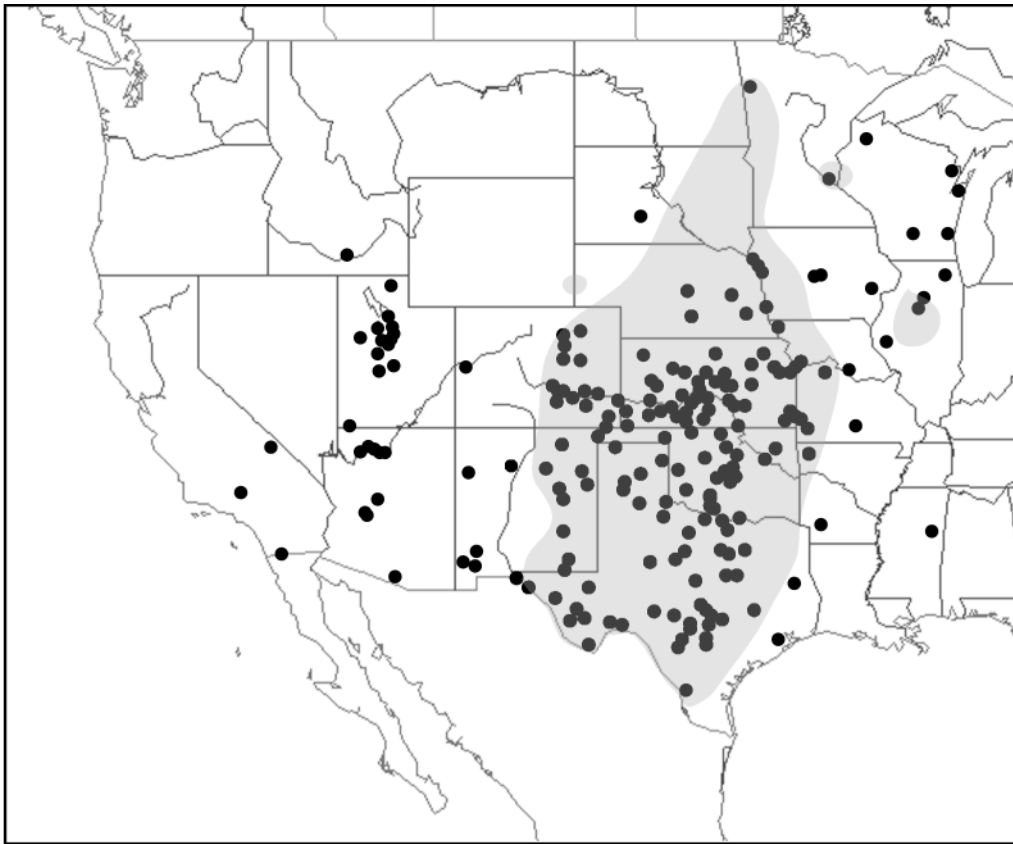


FIGURE 46. Collecting localities for *Schinia tertia*, shaded area is distribution of plant association *Liatris punctata* var. *nebraskana* (Asteraceae).

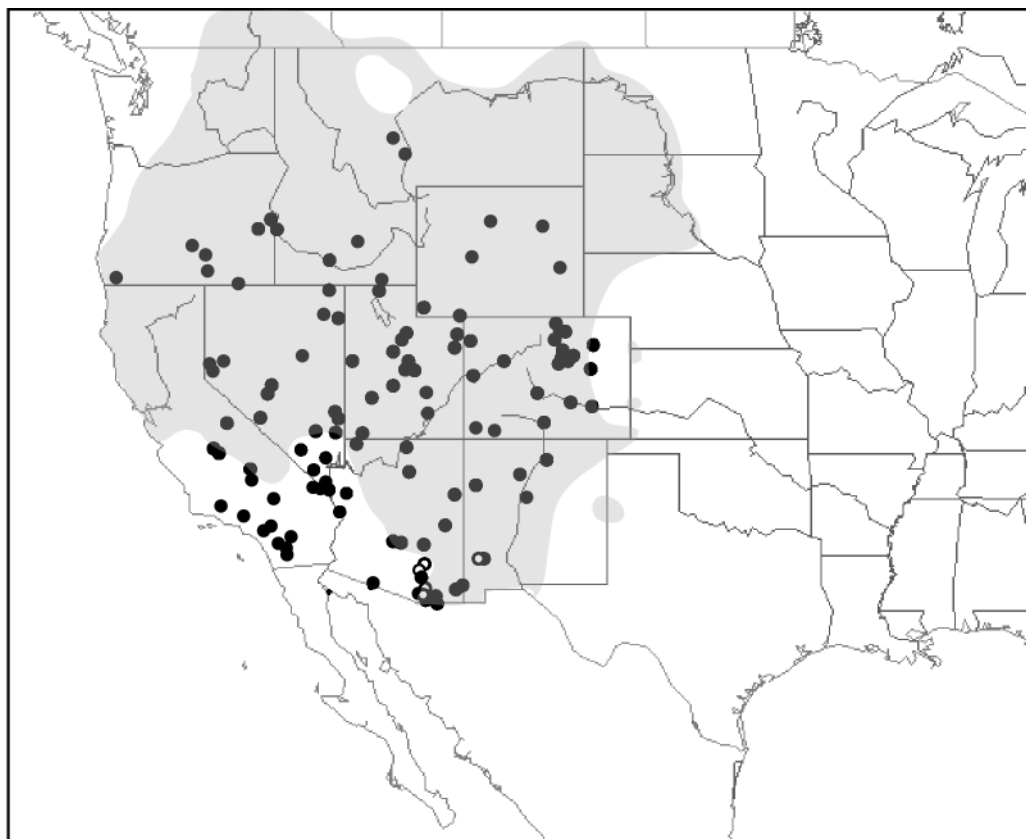
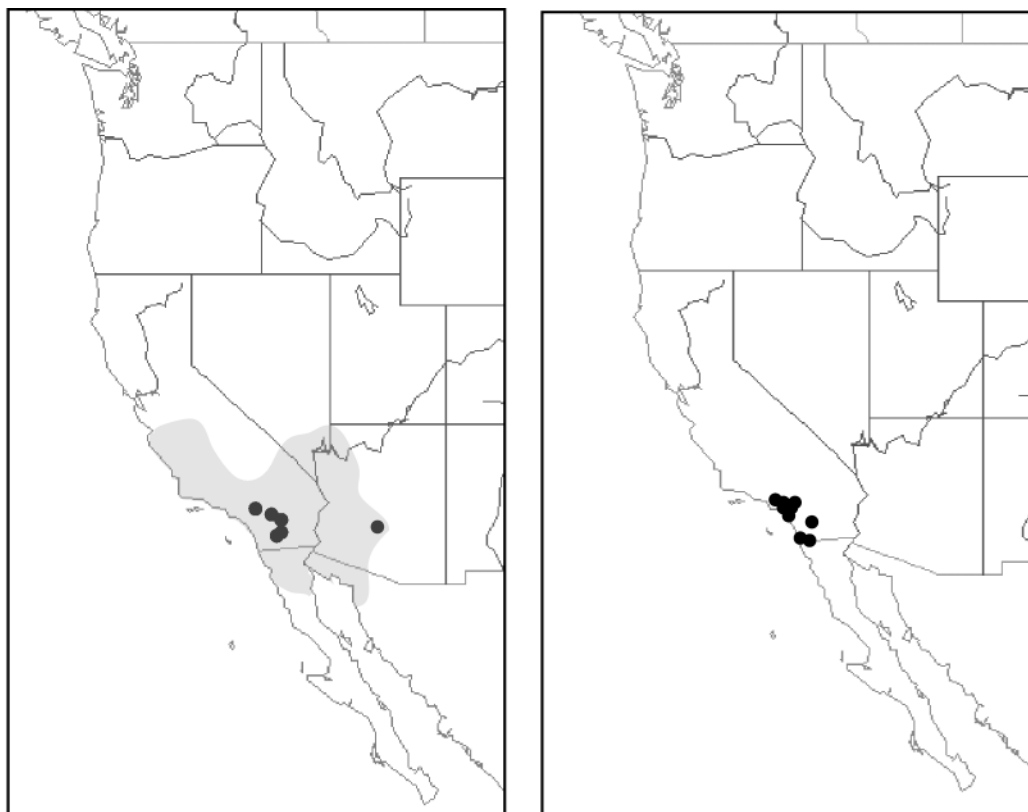


FIGURE 47. Collecting localities for *Schinia albafascia*, (closed circles) shaded area is distribution of host plant *Ericameria nauseosa* (Asteraceae); *S. ferrisi* (open circles).



48

49

FIGURES 48–49. Collecting localities for *Schinia* spp. 48, *S. erosa*, shaded area is distribution of host plant *Isocoma acradenia* var. *acradenia* (Asteraceae); 49, *S. brunnea*.